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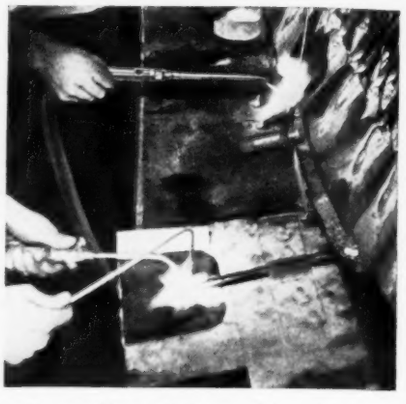

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NRA

As the Editor Views the News

IT IS strange that President Roosevelt, at the beginning of the new deal, did not caution professional labor unions to clean house. At that time he could have said to William Green and others, "Throw out the racketeers; cultivate responsible leadership; prove the capacity of your unions to serve employes faithfully. Do these things and my administration will grant you unusual opportunities in the recovery program."

Unfortunately, he did not counsel restraint. As a result, the encouragement of the new deal led to a wild orgy of abuse of privilege. In numerous instances, young radicals took the reins from sound, experienced leaders of union labor.

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Now, after 16 months of unbelievable excesses, the discipline of the professional labor union movement has been seriously impaired.

Applying the Brakes on Labor

In certain localities, the term "labor union" is synonymous with racketeering. The responsibility of professional unions—always a variable—is at low ebb. Therefore, it is not surprising that Republic Steel (p. 12), in refusing to renew its contract with the Amalgamated, and Weirton Steel (p. 14), in bringing charges against Amalgamated officials, have been forced to take punitive action. They are simply applying the checks which should have been administered by the government or by the national unions themselves.

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Every day brings new developments which bear upon competition. The increase of steel ingot capacity in 1933, reported by a committee of the American Iron and Steel institute, thus would seem to accentuate competition. An important merger, such as the pending Republic-Corrigan, McKinney deal (p. 10) in theory would relieve competition. A canal in the Beaver valley (p. 19), if complete, would realign the aspirants for business in certain steel markets. The renewed interest and activity in continuous mills spells sharper conflict for automobile markets. Against these evidences of natural trade rivalry, are arrayed the artificial influences of government policy. The President, once bitter against overcapacity and ruthless competition, now apparently hopes to revive competition (p. 20) on government bidding. These complex factors tax the ingenuity of management, which, seeking legitimate advantages in the free scramble for business, must also deal with shifting government policies.

Complexities of Competition

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No phase of industrial development is more fascinating under present conditions than the changes in design which involve the new applications of materials. The elevated-subway train of stainless steel (p. 23), which has just been delivered, again emphasizes the trend toward light weight construction which was first brought into prominence by the Union Pacific and Burlington trains. The latest Budd product is noteworthy, not only for its use of shot-welded stainless steel in the car bodies and alloy steels in the trucks, but also for the use of rubber and cork for sound deadening, aluminum for insulation, and for the unusual refinements in braking, acceleration, ventilation, etc. With the new street cars, buses and railroad cars to be introduced this fall, 1934 is destined to be a banner year in the development of a new trend in the design of railway rolling stock.

Banner Year In Car Design

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That the present use of steel (even if business were normal) is far below the potentialities of the product is proved by frequent experimentation in new fields. While not important from a tonnage standpoint, the possibility of stainless steel for all-metal airplanes (p. 28) is worthy of consideration. The likelihood that rolled steel will supplant wood for highway guards (p. 30) is being tested on the Pacific coast. Of interest to American steelmakers is the report (p. 35) that about 640,000 tons of steel is in use in mine props in Great Britain and that possible market of 82,000 tons annually is indicated. It would be interesting to compare these figures with the experience in American mines.

Use of Steel Broadening

E. L. Shaner

Iron Ore, Bank Loans, Factors In Republic-Corrigan Merger

CORRIGAN, McKINNEY STEEL CO.'S dowry to the Republic Steel Corp. at their forthcoming marriage will be 50,000,000 tons of high-grade iron ore, practically doubling Republic's reserves in the Lake Superior district and greatly strengthening its position in raw materials.

Some 122,000,000 tons of iron ore constitutes Republic's backlog, but the bulk of it is in the South, where the company has only pig iron, and no steelmaking, capacity. Corrigan, McKinney rates 50,000,000 tons of northern ore for its 1,000,000 tons of ingot capacity, whereas Republic at present has only that tonnage for 5,000,000 tons capacity.

By comparison — and because of the tax situation in Minnesota any discussion of ore reserves is a delicate matter—the United States Steel Corp. with an annual ingot capacity of 27,341,000 tons is believed to have about 700,000,000 tons of ore. Bethlehem Steel Corp., with an annual capacity of 9,360,000 tons of ingots, is accredited with 200,000,000 tons of domestic ore, plus foreign holdings.

Ore for 28 Capacity Years

Republic, third largest producer and capable of making slightly over 6,000,000 tons of ingots annually (giving effect to the merger), will have a total of 172,000,000 tons of ore. Relating the combined ingot capacity of Corrigan, McKinney and Republic and allowing for the use of 50 per cent scrap, the combination will have enough ore for 28 years, at capacity operations.

The merger, attempted unsuccessfully several times in the past few years, reached the stage last week where Tom M. Girdler, president-chairman of Republic, and Donald M. Gillies, president of Corrigan, McKinney, discussed a plan for submission to their directors and, if approved, to stockholders.

Evidencing the phase of public financing, representatives of Kuhn, Loeb & Co., New York, and of Field, Glore & Co., Chicago, sat in on the negotiations at Cleveland. Any offering of bonds or other securities would constitute the first steel security flotation of the depression. And in view of the red tape at Washington, any security offering would greatly prolong the proceedings.

Bank Liquidation Spurs Move

A strong force operating for the merger is the desire of the Union Trust Co., of Cleveland, now in process of liquidation, to close out its holdings in the underlying McKinney Steel Holding Co., and to clear up loans involving stock of the Cleveland-Cliffs Iron Co.

Of the capital stock of the Corrigan, McKinney company 55.03 per cent is owned by the McKinney Steel Holding Co. With the lapse of dividends, the preferred stock of the holding company, of which $7,250,000 is outstanding, carries control. About one-third of the outstanding preferred was owned by the Union Trust Co. at the time it was closed in 1933, and its investment affiliate—the Union-Cleveland Corp.—owns another large block. The preferred stock, which has sold as low as $17, was bid up to $65 last week, with $70 asked.

The Cleveland-Cliffs company obtained control of the Corrigan, McKinney company in 1930 when it purchased 62½ per cent of the holding company's stock from Mrs. James W. Corrigan and Mrs. P. B. R. Downing. An inventory of the Union Trust Co. a year ago listed a loan of $6,956,375 to the Cleveland-Cliffs company, with the steel stock as collateral.

Liquidation of the Union Trust Co. will necessitate sooner or later the disposal of this collateral, hence new ownership for Corrigan, McKinney appears to be inevitable.

Presumably, the two subsidiaries of the Corrigan, McKinney company will also pass to Republic. One is the Newton Steel Co., a sheet manufacturer at Monroe, Mich., and Newton Falls, O., with an annual capacity of 200,000 tons. A portion of Corrigan, McKinney sheet bar output has been absorbed by this subsidiary. The second is the N. & G. Taylor Co., manufacturer of tin plate at Cumberland, Md.; recently rumors have been current that a large can company was negotiating for this mill for the manufacture of terne plate for oil containers.

Summary of Corrigan Capacity

The Corrigan, McKinney company has four blast furnace stacks, 14 open-hearth steel furnaces, and semifinished and bar mills, rating 1,000,000 tons of pig iron, 1,000,000 tons of steel ingots, 733,000 tons of semifinished rolled products and 268,000 tons of merchant bars annually.

Next door to Corrigan, McKinney, in Cleveland, is the Otis Steel Co., which has generally been regarded as falling into the same eventual hands as Corrigan, McKinney. An improved financial position enabled Otis in June to

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NO RELATIONS would be changed by Republic-Corrigan merger, but Republic would pull away from the other large independents. Washington could not object to any further concentration of capacity as its effort to liquidate closed banks is a prime mover of the merger

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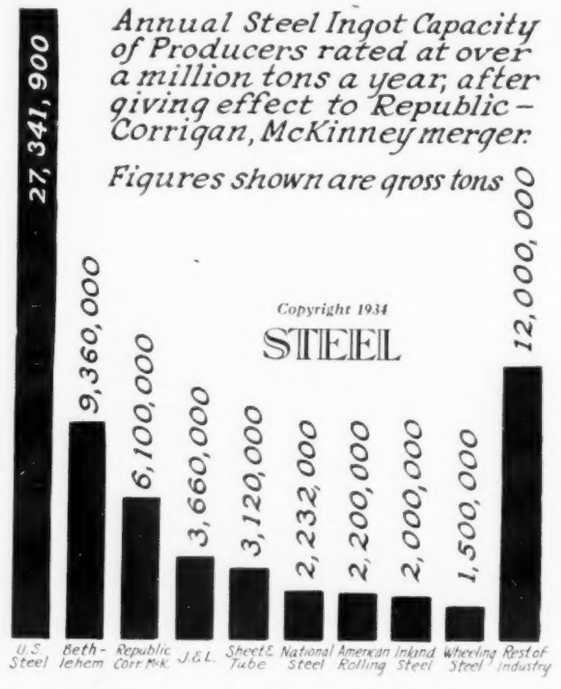
Annual Steel Ingot Capacity of Producers rated at over a million tons a year, after giving effect to Republic–Corrigan, McKinney merger.

Figures shown are gross tons



make some headway toward meeting deferred interest payments. Otis has two blast furnace stacks, eight open-hearth steel furnaces and semifinished, plate and sheet mills, rating 400,000 tons of pig iron, 990,000 tons of ingots, and 558,500 tons of finished hot rolled products annually.

In event the merger is consummated, it is possible that the general offices of Republic might be moved from Youngstown, O., to Cleveland, where executive offices are now maintained. Republic was organized in 1929 by Cyrus S. Eaton through a merger of the Republic Iron & Steel Co., Bourne-Fuller Co., Interstate Iron & Steel Co., Donner Steel Co., and Witherow Steel Co. It has been expected that eventually the Gulf States Steel Co. will provide Republic with steelmaking capacity as well as pig iron capacity in the South.

Reports are that in payment for Corrigan, McKinney Republic would issue and guarantee $15,000,000 in first mortgage bonds on the Corrigan plant, plus about $18,000,000 in Republic stock.

Structural Code

ALL provisions covering the erection of structural steel were stricken by NRA Administrator Johnson from the code for the structural and fabricated steel industry prior to approval of the code by General Johnson last Thursday. Because of the confused labor situation in the building trades, fabricators had long fought such action.

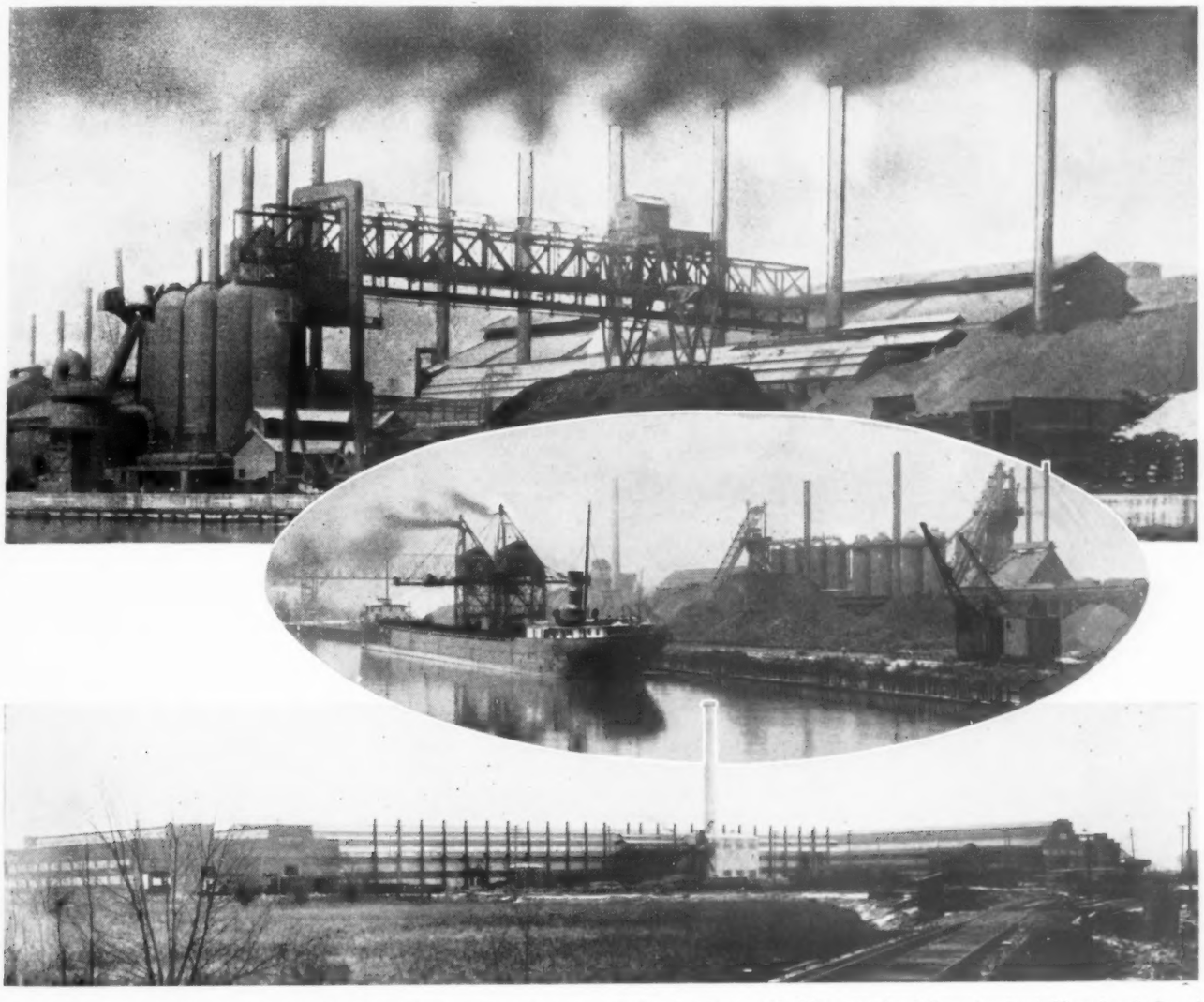
As finally approved, effective July 22 and subject to the provision that within 90 days the administrator may direct further hearings on such provisions as he may designate, the code refers only to the fabrication of steel.

That this meets with labor's approval may be judged by the comment of P. J. Morrin, president of the International Association of Bridge, Structural and Ornamental Iron Workers: "We regard it as a great moral victory and certainly as the most courageous and constructive action that has yet been taken by NRA."

In addition to diverting the control of erection work to chapter I of the code for the construction industry, which was approved Jan. 31, General Johnson has also raised proposed rates of pay for common labor in plants, established a maximum work-week not subject to variation, inserted a clause preventing sales below a member's own cost, and amended the schedule of unfair trade practices.

As approved, the code provides that workers shall not be employed for more than 40 hours in any one week, nor more than 8 hours in any 24-hour period, nor more than six days in any seven, except in cases of emergency when all overtime shall be paid for at the rate of time and one-third. These restrictions do not apply to those in managerial or executive capacity who earn $35 or more per week.

Employes engaged in drafting, detailing or designing are to be paid



PLANTS THAT ENLIVEN MERGER TALK: Above is part of the Corrigan, McKinney Steel Co. plant at Cleveland. Inset are the two blast furnace stacks of the Otis Steel Co., also in Cleveland, which may or may not be taken. Below is a panorama of Newton Steel Co.'s sheet mill near Monroe, Mich., completed in 1930 and having access to direct water shipments

not less than $20 per week, and a minimum rate of pay per hour for common labor in plants is established at 34 cents in Hawaii and southern states, with the minimum at 40 cents per hour in the remainder of the United States, Alaska and the canal zone.

The industry suffered a loss of one-half of the normal 50,000 employes during the depression, with its volume of production falling to one-quarter of 1929 volume. The code is estimated to bring benefit by increase in wages to 15 per cent of industry's employes.

Code Prices

WHETHER the permissible 15 per cent reductions in quotations on material for government projects will also apply to private buying is still a matter of individual interpretation. The door apparently has been left ajar.

In his executive order of June 29 (see p. 20) the President specified that reduced prices to government be filed immediately with the code authority. In his personal comment at that time the President said substantially: "It will give the public the same advantage as enjoyed by the government."

The Blue Eagle, house organ of NRA, on July 2 made this comment: "Private customers having access to the posted open prices will also have access to the filed bids and will therefore know exactly what prices are being quoted to the government and, it is expected, will guide their purchasing policies accordingly." This may be construed almost as a hope that private buyers will put pressure on producers to make government quotations the market.

Immediately, the bituminous coal industry recognized its peril and through the National Coal association asked for and received exemption; in other words, a specific ruling by NRA that the low prices to the government would not be extended to private buyers. The steel industry last week formally asked General Johnson for an exemption, but before departing on his farewell tour the General said he probably would not act on this request until he returned, which will be several weeks.

Therefore, a steel producer undercutting the market to favor the government must file the government price with the American Iron and Steel institute, the code authority, but whether or not this price is substituted for his previous filing appears to be a matter of judgment. There is no government ruling compelling such a producer to make this government price the open market price, nor is there any ruling preventing him from so doing.

Basing Point

SOUTHERN fabricators of steel have instituted what may parallel the rebellion in the Middle West in 1919 and lead to a duplicate of the Pittsburgh basing point case.

Banded together as the Southern Association of Steel Buyers and Consumers, with W. C. Martin, head of the Vulcan Rivet & Bolt Corp., Birmingham, Ala., as president, these fabricators have filed formal complaint against present Birmingham bases on structural shapes, sheets, wire and wire products, which are a differential of $3 a ton over the corresponding Pittsburgh bases.

"These prices are set up in such a way as to make a monopoly possible in the fabrication and distribution of steel," declares the association in a formal complaint to the federal trade commission. "These prices are made without due consideration as to cost of production and distribution."

Practically all steel producers have fabricating subsidiaries, the association points out, and many structural contracts have been taken below the code price of steel plus the freight, plus the cost of fabricating and erecting. Since pig iron in the Birmingham district is priced $4 below Pittsburgh, and scrap is $4 to $5 less, Birmingham steel prices should be $5 lower than Pittsburgh instead of $3 higher, the association contends.

The practice of making a delivered price on bolts, nuts and rivets for identified structures discriminates against manufacturers of these products who do not own a fabricating plant, the association charges.

Members of the association include the Lamson & Sessions Bolt Co., Ingalls Iron Works Co., Columbus Iron Works Co., Atlanta Plow Co., Chattanooga Boiler & Tank Co., Perfection Mattress & Spring Co., Hedges-Walsh-Weidner Co., Chicago Bridge & Iron Works, Continental Gin Co., Vulcan Rivet & Bolt Corp. Inc., and others.

The federal trade commission will send representatives from its New Orleans office to Birmingham, to investigate.

NRA

TO COMPLETE the codification of industry, NRA Administrator Johnson last Thursday invited industrial groups not yet coded to merge with existing kindred codes or to operate under a new "basic code."

By order of General Johnson a 30-day period was established for the completion of all code-making. This will free the major part of the NRA personnel for the work of administering the codes and changes.

The cleanup plan will cover 262 codes now pending, but most of the industrial groups involved are small and represent only a fraction of all industrial and trade employment. More than 90 per cent of industrial employment is covered by the 476 codes now in effect.

Four options are offered to industries not now coded: (1) To merge with kindred codes already existing; (2) to adopt the proposed basic code; (3) if they stay outside of both to guard against labor abuses or to have a code imposed on them, and (4) some industries may continue to work out their own codes.

The basic code provides for a minimum rate of pay whether on a time or piece work basis, that female employes performing substantially the same work as male employes be paid the same rate, and prevents any working conditions in violation of existing federal or state laws.

Labor

STEEL labor matters, quiescent since the formation of the national steel labor relations board two weeks ago, boiled up last week when a strike of 5000 employes of the Portsmouth, O., works of the Wheeling Steel Corp. was threatened through the discharge of two workers, one the corresponding secretary of the local Amalgamated association lodge, for fighting on the company's premises. The strike was averted when the labor board, in its first case, dispatched a conciliator and persuaded the Amalgamated to delay action.

Meanwhile, the Republic Steel Corp. was giving the Amalgamated association a jolt when it notified it that contracts at the Warren and Niles plants which expired June 30

(*Please turn to Page* 14)

Transportation

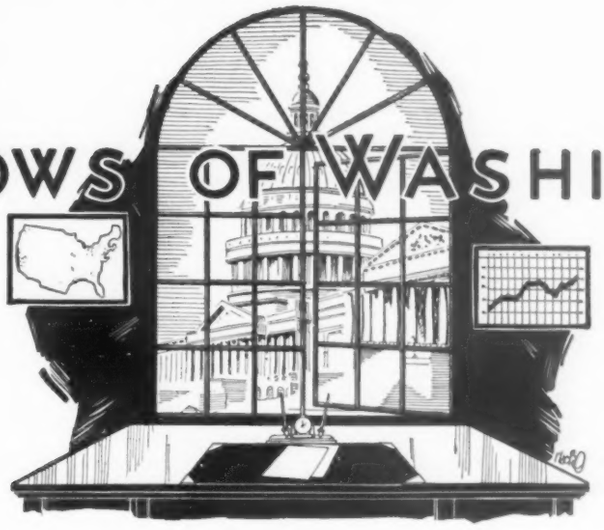
FIRST reaction of iron and steel shippers to the proposal of the Association of Railway Executives, broached at their Atlantic City, N. J., convention Friday, for a 10 per cent increase in freight rates is that the interstate commerce commission will not approve it, but in the event the commission should give its assent, a number of months would elapse before new tariffs could take effect.

Production

STEEL production last week rebounded to 30 per cent, a gain of 8 points. Improvement was noted in all districts, but indications this week point to a possible slight recession due to anticipated declines in the Pittsburgh, Birmingham and Detroit districts. A rise at Youngstown,

(*Please turn to Page* 16)

WINDOWS OF WASHINGTON



WASHINGTON

NOT long ago an issue of federal intermediate credit notes bearing ⅜ of 1 per cent interest for three months was oversubscribed 20 times. By contrast, the Pennsylvania railroad's recent offering of 50-year 4¼ per cent bonds—the first sizable security flotation in several years—is languishing notwithstanding glowing accounts of its reception.

This is typical of the avidity of investors, apparently with a plethora of funds, for short-term issues even at negligible rates of interest and their disinclination to make long-term commitments. The explanation, of course, is political and monetary uncertainty. No greater worry confronts Washington; it explains why the durable goods industries are dragging, why steel production has declined to barely half of the June peak.

The situation directs renewed attention to the apparent inconsistencies in the administration's recovery program — inconsistencies which doubtless are inescapable in so vast an undertaking, but nevertheless destroy confidence in one direction while attempting to generate it in another. It is like whipping a horse while drawing the reins tighter.

Radical Moves Change Picture

There is a good deal of talk in Washington that confidence, which was beginning to reappear when congress adjourned, received the greatest setback of the Roosevelt regime when the President signed the Frazier-Lemke farm moratorium and the railroad pension bills. These radical measures, supposed to have been sidetracked at this session, were revived when adjournment of congress was delayed 48 hours. The President approved them with the explanation that their faults would be corrected at the next session.

This frank bid for the support of farmers and railroad labor, coupled with the creation of several commissions to launch the next phase of the new deal—which is greater security for "the little fellow," or the transfer of property from the Haves to the Have-Nots—has made capital run for cover, of which the contrast noted in the opening paragraph of this article is an example.

Political Expediency Involved

But—capital's fears are one thing, Washington's objectives another. In November, all 435 members of the house and 32 of the 96 members of the senate will be elected. Every effort will be made to insure strong endorsement of the new deal at the polls. The degree of endorsement is contingent upon the state of employment between now and election, and this in turn depends more upon the durable goods industries than any other factor.

Therefore it is a reasonable deduction that if capital does not voluntarily flow into the durable goods industries it will be forced to; in other words, if the program of the administration does not encourage capital, the element of fear will be utilized. The best agency for accomplishing this would be inflation, and it may be no mere coincidence that talk of forthcoming inflation has been widespread the past week.

Leading economists state that credit inflation, which is enormous in its potentialities, has not yet begun to operate. The best opinion in Washington is that if business eases off seriously, if the lull in July and early August is not followed by an encouraging degree of recovery, the government will step into the picture with a political stimulus that will insure a fall pickup.

In self-defense, funds would search out equities. Already, it is reported, English and Scotch investment trusts have been buying common stocks on a moderate scale in the United States. An advance in the price of gold might be the fuse touching off an inflationary program. Such a step, however, is not likely to be taken before the President returns from his cruise in August. A rising stock market, moving up slowly as insiders anticipate the situation, would be a herald of this action.

From the administration viewpoint, business simply has to improve this fall to make certain the return of ringing majorities in both houses of congress, and with the executive branch of the government cloaked with all the authority necessary to bring the required props into play, it can be taken for granted that no effort will be spared.

Board of Five To Direct NRA?

Reorganization of NRA and transfer of its control from the dictatorship of General Johnson to a regency of five men appears to be the first major step toward mollifying and assuring business—and labor as well.

A year ago, when business was floundering, the crying need was for action, not deliberation. No pair of hands could have been quicker, though rougher, with the hypodermic needle. Now that the country is recovering, a fine, delicate touch is necessary. The general was splendid at the rear of the ambulance, but is a lumbering figure in the convalescent ward.

The political aspect is that the general has become a liability. From the first suspect by business, he has now also earned the opposition of organized labor. Who would have thought, even six months ago, that labor would be picketing the department of commerce building, protesting the firing of an NRA employe and demanding that it obey section 7a!

The "inside" appears to be that for some time the three closest advisers of the President have been urging the necessity for subordinating the general. These three are Bernard Baruch, Prof. Raymond T.

Moley and Louis McHenry Howe. The first two are supposed, recently, to have conferred with General Johnson in New York and to have persuaded him that the period for one-man control has passed.

The last prop went out from under him when he alienated labor in the steel strike situation. When steel executives accepted the general's suggestion of an impartial labor board—incidentally, much on the same pattern as the new steel labor relations board—he turned savagely on the Amalgamated Association of Iron, Steel and Tin Workers. His usefulness in that situation ended. Secretary Perkins edged in and walked off with the authority over labor disputes she had been eyeing for a year.

Hence the recent "voluntary" proposal of the general that he step down shortly and that NRA be directed by a nonpartisan commission. Some of the smarter ones in Washington suggest that Republicans be placed in the majority, just as former President Hoover put RFC in the hands of Democrats. Those suggested as directors of NRA are George L. Berry and A. R. Glancy, now division administrators; G. A. Lynch, administrative officer; Robert W. Lea, assistant administrator for industry, and George Buckley, acting division administrator.

General Steps on Hull's Toes

True to his skilfull parrying of matters of personnel, in Panama last week the President said there is no immediate thought of General Johnson retiring. But the general himself has estimated the period required for reorganizing NRA as several months, and by election time he may be heard of chiefly for the darts aimed at him by Republican critics of the new deal.

For some weeks the general has been a tired man. His acrimonious debate with Clarence Darrow, chief of the former national recovery review board, indicated exhaustion and lack of balance. Last week's attack upon Hitler ranges Secretary of State Hull among his critics, and not even so important a figure as Professor Moley, let alone a mere NRA administrator, can get away with anything in the state department.

Washington will miss General Johnson—when he finally subsides. Even the President enjoyed hugely such shafts as chiselers, dead cats, tories, neanderthalers and so on. No man has ever loosed so magnificent a vocabulary upon the country. What a sales promotion executive he would make!

With General Johnson out on the stump, another effort is being made to win Henry Ford's tacit acceptance of NRA in order to enable the Ford Motor Co. to bid on 5000 to 7500 light trucks for the war department in August.

While the war department cannot say so officially, for purposes of parts inventories, it prefers that a good share of the forthcoming purchase be Fords, but no Ford bid could be entertained without the blue eagle roosting on Dearborn. The stage was set for a roundabout agreement through a Ford retail dealer in Washington when General Johnson mistakingly gave the early negotiations out to the press. But with the general away, sugar instead of vinegar may be tried upon Mr. Ford.

Last week Assistant Secretary of War Woodring temporarily rescinded his order requiring bidders to certify that they have not employed lobbyists. This permits the Fargo truck to enter the competition.

Labor

(*Concluded from Page* 12)

would not be renewed. The explanation was that there was danger that the management of the Amalgamated may pass into the hands of radicals and "we cannot afford to have a contract with any organization which may at any time throw the men in our plants out of work due to conditions or controversies existing in a plant hundreds of miles away."

This severance of 21-year relations of Republic with the Amalgamated coincided with the annual wage conference of the Western Sheet and Tin Pate Manufacturers association at Pittsburgh, beginning July 10. This meeting picked up the threads from the recess of a few weeks ago at Pittsburgh.

To an extent, Republic's action may strengthen the hands of Michael F. Tighe, 76-year old president of the Amalgamated, in his contest with the rank and file committee and other radicals. A new president will be elected by the Amalgamated on the third Saturday of September—the 15th—and Mr. Tighe's overthrow is not impossible.

While steel executives are not disposed to admit the Amalgamated into their plants or to concede a closed shop, nevertheless in some mills long-standing relations with the Amalgamated have governed wage scales, in turn predicated upon market prices, and these relationships have developed an attitude of fairness and responsibility. With the new radical leadership, however, steel leaders refuse to deal.

¶At Washington the new national labor relations board, headed by Lloyd Garrison, of the University of Wisconsin, as chairman, was getting its feet on the ground. The general board maintains it is not a superboard set up to over-ride specific industry boards such as that for steel, but presumably it offers an appeal from the latter boards. The steel board continues to maintain silence pending the adoption of a program. ¶Strike of about 1000 are miners at the Woodward Iron Co. mines in the Birmingham district was settled last week by a conciliator of the department of labor. A similar result is expected to attend mediation of the dispute involving 8000 ore miners of the Republic Steel Corp. and the Sloss-Sheffield Steel & Iron Co., also in the South.

¶Warrants were issued last Thursday for five officials of the Clarksburg, W. Va., lodge of the Amalgamated association, charging them with intimidating witnesses in the case involving the Weirton Steel Co., which has a branch at Clarksburg, with the former national labor board. Federal court at Wilmington, Del., it will be recalled, refused to issue a temporary injunction compelling the company to hold a second election for choosing representatives for collective bargaining.

Financial

ALLEGHENY STEEL CO., Brackenridge, Pa., will pay 15 cents a share on its common stock Aug. 15, to record of Aug. 1, the first common dividend by this producer since December, 1931, when 5 cents was paid.

This is the first common dividend by any producer of steel since the depth of the depression, with the exception of National Steel Corp., Pittsburgh, which has not missed a dividend since its organization in 1930. National Steel will pay its regular 25-cent common dividend July 30 to record of July 20.

Institute Compiles Final 1933 Output Statistics

Final figures of the American Iron and Steel institute on 1933 production of steel ingots and castings place open-hearth output at 20,381,672 gross tons, bessemer at 2,428,791 tons, crucible at 681 tons and electric at 421,203 tons—a total of 23,232,347 gross tons. This compares with 13,681,162 tons in 1932, 25,945,501 tons in 1931 and the record of 56,433,473 tons in 1929.

Of this total for 1933, 22,894,286 tons comprises ingots and 338,061 tons steel castings. Production of duplex steel ingots and castings was 386,154 tons. Alloy ingots and castings totaled 1,547,183 tons. Production of various rolled products was: Rails, 416,296 tons; plates and sheets, 6,216,650 tons; wire rods, 2,024,095 tons; shapes, 1,109,457 tons.

Complete details for 1933 will be published in next week's STEEL.

MIRRORS OF MOTORDOM

DETROIT

THERE were two called strikes on automobile production as July opened but, unlike the saga of the mighty Casey, "there is joy in town tonight" for at mid-July Detroit sees the industry catching hold of the next pitch for a solid hit.

Instead of being the usual complete bust July will come through with a fairly heavy output, considering the times, largely on the showing of the last three weeks of the month.

If ever a month started off inauspiciously it was July. Concerned largely with the trials of taking inventories and rearranging some factory equipment, manufacturers closed their doors a few days before July 4 and wrote off the first week of the month. But last Monday, with the retail situation still displaying unusual strength for the season, the industry snapped out of its holiday and production schedules resumed from where they left off late in June.

This contra-seasonal activity in July, however, has a basis more deep-seated than an encouraging retail market. The lesson learned in the closing weeks of 1933 and the opening weeks of 1934 is still fresh and the industry is not going to be caught napping again on model changes.

Planning Ahead for Retooling

So, this month and next, automobile manufacturers contemplate cleaning up the great bulk of production of this year's models. This will involve a total of assemblies somewhat larger than actual retail sales. Toward the close of this period one department after another will go down for retooling in anticipation of 1935 models.

But when late August and early September comes there will be a reappraisal of the retail market. It will be recalled that last year some manufacturers took their 1933 models out of production only to have an unexpectedly brisk retail market continue into the early winter. A good many dealers had only bare floors to display to prospective buyers. Chrysler, principally, did the smart thing, resumed production and was in relatively better position than most other manufacturers to meet this market situation.

Ford and Chevrolet, to mention only two volume interests, have grouped July and August so far as production and releases of material are concerned. By Sept. 1 Ford contemplates making 135,000 of the V-8 series, while Chevrolet will roll 153,000 units off its assembly line in July and August. The tentative Chrysler program for the same period is 75,000 jobs.

Materials, chief among which is steel, have been bought up to Sept. 1, which is regarded as confirmation that many producers will wind up their present lines in September.

Rumors on Hudson Unfounded

The rumor crop never flourished more than that flock of stories now making a target out of Hudson Motor. Hudson's management has undertaken steps the past week to quash the reports, many of which are unfounded.

Detroit is gossiping that Chrysler is about to buy out Hudson, that Packard and Hudson will join hands, and even that Sears-Roebuck has bought the Hudson body plant to make mail-order automobiles! Many stories hinge on Hudson finances.

Actually, all are unfounded and apparently grow out of the recent Hudson personnel changes, a purchasing department shakeup, and the recollection of Mr. McInnenny's demise. Some close to Hudson blame the reports as originating in a stock-rigging scheme, pointing conclusively to the common stock's nosedive on the Big Board.

A Hudson spokesman told STEEL last week that actually the company had been making money each week since February and that perhaps what might be construed as the only weak link in the chain was stocks of 22,000 Hudsons and Terraplanes in dealers' hands. Stocks have been lowered every week, though, for the past six weeks.

Factory shipments of Hudsons and Terraplanes in the first half of 1934 aggregated 65,810 cars, or 286 per cent over the 23,002 cars reported for the first half of 1933. Retail sales for the last week of June—the latest available—showed an increase of 7.7 per cent over the preceding week and constituted the largest final week, and also the largest June, from a retail sales standpoint.

Chrysler Sees Airflow Success

Last week the 20,000th airflow car came off the assembly line of the Chrysler Corp. and present indications are that estimates for this series for the remainder of the year will exceed earlier expectations.

With the majority of the larger manufacturers going streamline in one form or another next year, it is significant that Chrysler is the only manufacturer having special manufacturing equipment for bodies of airflow design and also special assembly line machinery for the assembly of this type.

In Detroit last week Walter P. Chrysler declared that "there is emphatic evidence from all parts of the country that these airflow cars which are now a definite stable part of our Chrysler and DeSoto lines will continue to build up an increasingly greater and wider public acceptance in the years to come."

Casting up the account for the first half year, output of Chrysler cars, including the airflow series, ap-

proximated 28,500 or an increase of 72 per cent over the 16,400 of the first half of 1933. Even with January completely out on account of the changeover, DeSoto airflow production in the first half totaled 11,651 units, compared with 11,505 a year ago. Dodge production in the first half was 106,000, contrasted with 49,000 a year ago, while Plymouth totaled 232,000 or 96 per cent over the 118,000 of a year ago.

General Motors is making some rearrangement in its Fisher Body plants. Chief among these at this moment is the transfer of several departments of the Cleveland plant to Pontiac. In addition, a large press room addition is going up at Cleveland.

The Cleveland division, aside from Chevrolet body work, has always made a large share of the Pontiac bodies and stampings. However, considerable equipment is now being moved directly into the back yard of the Pontiac division itself. The move will more nearly isolate the two General Motors subsidiaries.

At the same time, the Cleveland plant will soon have an addition, placed either next to the new steel storage shed erected last winter or in the place of the present band saw division. The new addition requires some 500 tons of structural steel.

Pontiac Salvaging Old Tools

At Pontiac the equipment buying program on the new car has been held up. After spending a large sum for new machinery on the coming six, the management there has resorted to salvaging a large number of existing machine tools in the plant and is content with putting new fixtures on them instead of following through with a complete repurchasing program on equipment.

It is almost certain that the new Pontiac will take on many of the features of the present 1934 Cadillac and LaSalle, as has been predicted for the entire General Motors lines next year. Incidentally, many in Detroit last week believed an important personnel announcement was forthcoming affecting the Pontiac division.

Rebounding from the shutdowns which in the case of Ford and Hudson-Terraplane lasted from June 29 to July 9, and and in the case of many other manufacturers covered the entire July Fourth week, automobile assemblies in the week ended July 14 touched 66,000 units. This compared with 30,493 the week preceding and 80,936 in the last week of June.

More than offsetting some plants which reported negligible output, Buick increased last week to 2325 units from 2000 the week preceding. Chevrolet expanded from 16,000 to 20,000. Dodge which was closed the week before assembled 2375 units.

Automobile Production

Passenger Cars and Trucks—U. S. Only
By Department of Commerce

	1932	1933	1934
January	119,344	130,087	156,907
February	117,418	106,888	231,707
March	118,959	118,002	331,263
April	148,326	180,713	354,745
May	184,295	218,347	331,641
June	183,106	253,387	300,000*

[*Estimated]

Estimated by *Cram's Reports*

July 7	30,493
July 14	66,000

Nash was practically unchanged at 1250 cars.

Plymouth turned out 9000 units, against 4000 the week before. Pontiac increased from 700 units to 1600, Oldsmobile from 2400 to 3000 and Studebaker which was closed the week before produced 1200 cars.

Production

(*Concluded from Page* 12)

however, may offset this. Details for various districts follow:

Youngstown—Gained 15 points to 30 per cent last week, and the rate is expected to rise to 37 per cent this week due to the starting of Carnegie Steel Co.'s Ohio works.

Chicago—Expanded to 31 per cent by the middle of last week after opening unchanged from the previous week at 28. Another blast furnace was banked, however, leaving the district 9 active steelworks stacks out of 36 in addition to two merchant units.

Detroit—Rebounded to 93 per cent last week, a gain of 47 points. Sixteen out of 17 open-hearth furnaces are producing ingots, the one idle one being down for repairs. Some decline in this rate is anticipated for this week, owing to accumulating stocks of banked ingots.

Wheeling—Rose 6 points last week to 30 per cent. As of the close of the week, 11 open hearths were on, but one large producer had only three open-hearth furnaces going from July 11 on. Another leading producer, however, operated six open-hearth furnaces through the entire week.

Pittsburgh—Advanced 6 points last week to 21 per cent, the gain being less than expected. For this week, a decline to under 20 per cent is anticipated.

Twelve out of 60 steelworks blast furnaces are in operation and several of these are on a slow draft. For the Corporation subsidiaries, American Steel & Wire Co. continues with 1 of 2 on, while Carnegie Steel Co. has 2 Carrie, 1 Isabella and 4 Edgar Thomson stacks blowing, and National Tube Co. has 1 of 4 on at Monongahela works. One of the Carnegie Edgar Thomson stacks which resumed last week is now on a run of spiegeleisen.

For the independents, Bethlehem Steel Co. has 2 of 7 active at Johnstown, Pa., Jones & Laughlin 3 of 11, Pittsburgh Crucible blew out a Midland stack for repairs.

Buffalo—Following complete suspension of production for a period of ten days, steelworks operations resumed at 21 per cent last week and this rate is expected to hold this week. Eight of 38 open hearths are now active and are scheduled to continue for the present.

Birmingham—Advanced 2½ points last week to 20 per cent. Tennessee Coal, Iron & Railroad Co. suspended operations Sunday at its rail mill, took off five open-hearths furnaces and three blast furnaces, and shut down one coal mine and one ore mine. Republic Steel Corp. will close down one blast furnace in two weeks.

New England—Gained 6 point last week to 61 per cent, with indications this rate will be unchanged for the week starting July 16.

Central eastern seaboard—After dipping to 18-19 per cent in the first week of July, operations advanced to 22-23 per cent in the week ended July 14. A slight gain is anticipated this week.

Cleveland-Lorain—Up 15 points to 41 per cent last week, with National Tube Co., Lorain, and Corrigan, McKinney Steel Co. each operating six open hearths, and Otis Steel Co. four. These schedules are expected to continue this week.

U. S. STEEL CORP. SHIPMENTS

(Inter-company shipments not included)

(Tons)

	1934	1933	1932	1931
Jan.	331,777	285,138	426,271	800,031
Feb.	385,500	275,929	413,001	762,522
March	588,209	256,793	388,579	907,251
April	643,009	335,321	395,091	878,558
May	745,063	455,302	338,202	764,178
June	985,337	603,937	324,746	653,104
6 mo.	3,678,895	2,212,420	2,285,899	4,765,644
July		701,322	272,448	593,900
Aug.		668,155	291,688	573,372
Sept		575,161	316,019	486,928
Oct.		572,897	310,007	476,032
Nov.		430,358	275,594	435,697
Dec.		600,639	227,576	351,211
Yrl. adj.		44,288	5,160	6,040
Total		5,805,235	3,974,062	7,676,744

Shipments of finished steel products by the United States Steel Corp. in June, at 985,337 tons, were the heaviest since May, 1930, when they totaled 1,203,916 tons. They exceeded the May total by 240,274 tons, or by 32.24 per cent, and reflected the heavy demands by consumers in cleaning up second quarter contracts.

Industrial Men in the Day's News

Edward A. Johnston, Vice President in Charge of Engineering, International Harvester Co.

—Moffett-Russell Photo

Associated with the company for 40 years, he has been active in the development of tractors.

Starting as machinist and patternmaker, in 1907 he took charge of the manufacture of auto buggies.

Successive promotions followed and in 1922 he was appointed director of engineering activity.

EDWARD A. JOHNSTON, who recently (STEEL, July 2) was elected vice president in charge of engineering for the International Harvester Co., Chicago, has been responsible for the development of a number of the company's products during his 40 years of association with that organization. He has been particularly active in the development of International tractors.

Mr. Johnston's identification with the company dates from 1894, when he entered the experimental department of the McCormick works at Chicago as a machinist and patternmaker. Two years later he was transferred to the drafting room, and in 1907 he was placed in charge of the design and manufacture of auto buggies.

Later in the same year he was transferred to Akron, O., as chief engineer of the International plant there, becoming superintendent shortly afterward.

When the tractor works was built in Chicago in 1909, Mr. Johnston returned to that city to superintend the work, and upon its completion he was made superintendent and chief engineer of the plant.

Six years later he was transferred to the general office in Chicago as manager of the gas power engineering department; he was promoted in 1916 to manager of the experimental department, and in 1922 was made director of engineering and a member of the executive council.

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Willis L. King, director of Jones & Laughlin Steel Corp., Pittsburgh, and formerly a vice president of the company, celebrated his sixty-fifth anniversary of continuous service with Jones & Laughlin on July 12.

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Edward H. Muhlenbrock has been elected president of the Holland Furnace Co., Holland Mich., succeeding H. W. Thorne who recently resigned.

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Frank G. Riehl has resigned as receiver for the Jamestown Metal Desk Co., Jamestown, N. Y. He is succeeded by Frank Garratt, president of Hope's Windows, Jamestown, manufacturer of metal furniture.

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L. R. Brown, formerly advertising manager of Oil Well Supply Co. and previously with Mesta Machine Co., has recently become affiliated with the Hagan Corp., Pittsburgh, in a similar capacity.

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C. W. Piper has been appointed sales representative for southern Ohio and eastern Indiana territory by H. O. Swoboda Inc., Pittsburgh. His headquarters will be in Norwood, O., and he will handle sales of continuous electric heat treating furnaces, electric immersion heaters and other industrial heating equipment built by the company.

□ □ □

Wilson Oliver has been elected vice president of Oliver Bros. Inc., Pittsburgh, succeeding Walter C. Murtha, who is retiring. Mr. Oliver is the son of the late Thomas E. Oliver, founder and former president of the company. For the past 10 years, Wilson Oliver has been in charge of the company's Pittsburgh office, transferring to a new branch office in Chicago last April. The company is resident buyer for wholesales of hardware, iron, steel, metals and other supplies.

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Joseph B. Andrews, president of the Andrews Steel Co., Newport, Ky., was injured in an automobile accident July 8, resulting from a locked steering wheel.

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Malcolm E. Gregg, since 1928 assistant district sales manager for the Milwaukee office of the Inland Steel Co., Chicago, has been appointed district sales manager, succeeding the late Harry L. McCauley. Mr. Gregg started his business career in 1904, in the employ of the Metropolitan Coke Co. at Milwaukee. In 1905 he was associated with the Basset-Presley Co. in New York state and in 1907 became affiliated with the Republic Iron & Steel Co. at Cleveland.

In the fall of 1908 he was appointed manager of the latter company's Buffalo office, where he remained until 1920, when he was employed by the Lackawanna Steel Co. at Buffalo. He subsequently became manager of this company's office at Detroit, and in 1925 became associated with the Inland company as assistant district sales manager of the St. Paul office, being transferred to Milwaukee in 1928.

Malcolm E. Gregg

□ □ □

William B. Henderson, secretary of the code authority and Washing-

ton representative of the Machinery and Allied Products institute (MAPI), is to become executive vice president of the Refrigerating Machinery association, according to announcement by W. A. Shipley, head of the association and president of the York Ice Machinery Corp., York, Pa. Also secretary of the durable goods committee, Mr. Henderson will assume his new duties Aug. 1, with offices of the association being moved to Washington from Philadelphia. After service in the war for the British army in the Royal Flying Corps, he spent four years in Brazil with the Brazilian Traction Light & Power Co. Returning to this country in 1926, he became engaged in the securities business in Chicago and later was named personal assistant to the chairman of the board of the Chicago Trust Co. More recently he was secretary of over 200 real estate bondholders protective committees sponsored by the Central Republic Trust Co. of Chicago and was engaged in assisting the liquidation of assets of that bank. He joined the MAPI staff in 1933.

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C. A. Macfie and C. C. Felton have been appointed vice presidents of Revere Copper & Brass Inc., with headquarters in the New York Central building, New York.

See Industrial Advertisers Convention a Record

A new high in intensive interchange of ideas for progressive industrial advertising is indicated for the 1934 convention of the National Industrial Advertisers' association to be held in Cincinnati, Sept. 20-22, according to William E. McFee, president of the Cincinnati chapter of the association, and identified with the American Rolling Mill Co.

Committee members now at work on details of arrangements are:

Promotion: William E. McFee, chairman, American Rolling Mill Co., Middletown, O.; Kenneth Hunt, vice chairman, Champion Coated Paper Co., Hamilton, O.; C. F. Wulff, Kirk & Blum, Cincinnati; Fred Berling, Lunkenheimer Co., Cincinnati; H. K. Kenyon, American Rolling Mill Co., Middletown.

Exhibits: H. V. Mercer, chairman, American Rolling Mill Co., Middletown; Charles M. Reesey, vice chairman, Cincinnati Milling Machine Co., Cincinnati; Oscar Bigler, Baer & Bigler, Cincinnati; Walter Mason, the Bohnett Co., Cincinnati; Walter Spindler, American Rolling Mill Co., culvert division, Middletown; Royal Ryan, Ex-officio, Netherland Plaza, Cincinnati.

Entertainment: Alexander Thomson Jr., chairman, Champion Coated Paper Co., Hamilton; Nelson Blair, Eagle-Picher Lead Co., Cincinnati; John M. Krings, Modern Machine Shop, Cincinnati; Colter Rule, Champion Coated Paper Co., Hamilton; Walter Mason, the Bohnett Co., Cincinnati.

Harris & Ewing

William B. Henderson

Registration: Allan E. Beach, chairman, Littleford Bros., Cincinnati; A. Bicknaver, the Bohnett Co., Cincinnati; Royal Ryan, Netherland Plaza, Cincinnati.

Transportation: C. W. Riefkin, chairman, Newport Rolling Mill Co., Newport, Ky.; Bill Heilig, Powell Valve Co., Cincinnati; S. C. Baer, Baer & Bigler, Cincinnati.

Publicity: Kenneth Magers, chairman, the Union Gas & Electric Co., Cincinnati; George Winter, vice chairman, Winter & Winter, Cincinnati; E. J. Keck, Dayton Linotyping Co., Dayton, O.; Howard Campbell, Modern Machine Shop, Cincinnati; W. D. Shannon, Allis-Chalmers Mfg. Co., Cincinnati.

Died:

L. W. HOSTETTLER, 49, general sales manager for the Allegheny Steel Co., Brackenridge, Pa., in an automobile accident near Waukegan, Ill., July 10. He had been with the Allegheny company for about 20 years, previously having been associated with Youngstown Pressed Steel Co.

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Jacob H. Sitkin, 45, owner of the Juniata Iron & Steel Co., Lewiston, Pa., in Philadelphia, June 26.

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Joseph B. Card, 59, president of the Indiana Wood Preserving Co., Chicago, at his home in Highland Park, Ill., July 11.

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William C. Beelat, formerly a purchasing agent for the Continental Motors Corp., Detroit, in Detroit, July 9.

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Galvin R. M. Wilcox, 85, founder and former president of the Coldwell-Wilcox Foundry Co., Newburgh, N. Y., in that city, recently.

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C. S. Redfield, 64, president of Redfield-Coupe Inc., New York, and formerly advertising director of the Yale & Towne Mfg. Co., Stamford, Conn., at his summer home in Allenhurst, N. J., July 8.

□ □ □

Edmund K. Swigart, 67, senior vice president of the Bucyrus-Erie Co., Milwaukee, on a fishing trip in northern Wisconsin, July 7. He was also chairman of the board of the Oilgear Co., Milwaukee, of which his son, Harry M., is president.

□ □ □

Charles P. Belden, 63, associated with the Belden Mfg. Co., Chicago, manufacturer of insulated wire, in Chicago, July 5. Since 1912 he was identified with the Belden company which was established by his brother, Joseph C. Belden.

□ □ □

David E. Parsons, 68, for nearly 40 years associated with the Strong Carlisle & Hammond Co., Cleveland, at his home in Avon Lake, O., July 12, after a long illness. He was store superintendent until three years ago when he retired.

□ □ □

Carl L. Peters, 54, president of Geiger & Peters Inc., Indianapolis, structural steel and ornamental iron fabricator, in Indianapolis, July 8. Born in Essen, Germany, he came to this country at the age of 11, and had been in the fabricating business for the past 28 years.

□ □ □

Alfred M. Felgate, 70, at one time engineer for the King Bridge Co. and American Steel & Wire Co., Cleveland, and former bridge engineer for Cuyahoga county, Ohio, at his home in North Ridgeville, O., July 12. He was also active for eight years with the engineering firm of Wilbur Watson & Associates, Cleveland. He retired in 1933.

□ □ □

Frank P. Callahan, 55, formerly vice president of Foote Bros. Gear & Machine Co., Chicago, in that city, July 6. Associated with the company for about 25 years, he previously had been works manager and later in charge of engineering. He resigned in 1929 and until recently had been engaged in consulting engineering work.

Valleys Back Canal as Means Of Tapping Midwest Markets

BY J. C. ARGETSINGER

FOR a number of years, industries in the Mahoning, Shenango and Beaver valleys — the section known, with respect to steel production, as the "Youngstown district"— have sought governmental approval and aid for a waterway which would give this district the benefits of low-cost water transportation.

At first the project was not favorably considered by the government. Repeated efforts were made, however, to bring the significance and the benefits of such a waterway before proper governmental authorities; and in December of last year, the question was again presented in great detail, and with ample supporting evidence, before the United States board of engineers for rivers and harbors of the war department.

In January of this year the board of engineers announced its approval of the plan, and in March the question was presented to the committee on rivers and harbors of the house of representatives, and after a full hearing was approved and accepted by the committee.

A PWA appropriation for the project has been requested by the Youngstown chamber of commerce canal committee from PWA Director Ickes. War department engineers have approved the project.

A Co-Operative Undertaking

While the major share of the cost of construction will be borne by the government, industries and communities benefited will also contribute substantially to its cost.

This waterway is of vital interest to the steel industry in the entire Youngstown district and to consumers of steel in territories which, through the canal, could be reached from Youngstown by water.

The primary need for the construction of this waterway lies in the fact that the heavy industries are responsible for by far the major share of the industrial activity in the Youngstown district.

Such industries require the transportation of heavy commodities in large volume. The great bulk of the district's business is centered about steel and steel products. It is the third largest producing center of steel in the United States.

In normal times, industry in the Mahoning, Shenango and Beaver valleys gives employment to over 106,000 persons. Raw materials in the steel industry are, of course, largely coal or coke, iron ore, fluxing stone and scrap iron. These must be shipped into the district. Steel must be shipped out.

In the earlier days of steel manufacture, before the improvement of the Ohio river system—while the entire industry was centered largely around the Pittsburgh district—both raw materials and finished products of the industry as a whole were shipped largely by rail, and in that respect Youngstown and vicinity held a position comparable to the rest of the industry. Its mills were located half-way between the coal fields on the south, and lake ports, where ore was received, on the north.

AN ARDENT proponent of the Beaver-Mahoning canal, J. C. Argetsinger, general counsel for the Youngstown Sheet & Tube Co., Youngstown, O., in this article has described succinctly this waterway, its cost, the effect on railroads, the possibility of linking Lake Erie with the Ohio river.

As the industry developed, however, and as centers of consumption tended more largely toward the Middle West, the industry as a whole recognized the value of water transportation as a means of cutting freight costs; and at the present time utilizes water or rail-and-water wherever possible.

Governmental improvements of the Allegheny, Monongahela and Ohio rivers enable Pittsburgh producers to bring in coal by water and to ship out steel by water down the Ohio to lower Ohio and Mississippi ports.

Producers in the Cleveland and Chicago districts possess the benefit of direct water shipment of ore.

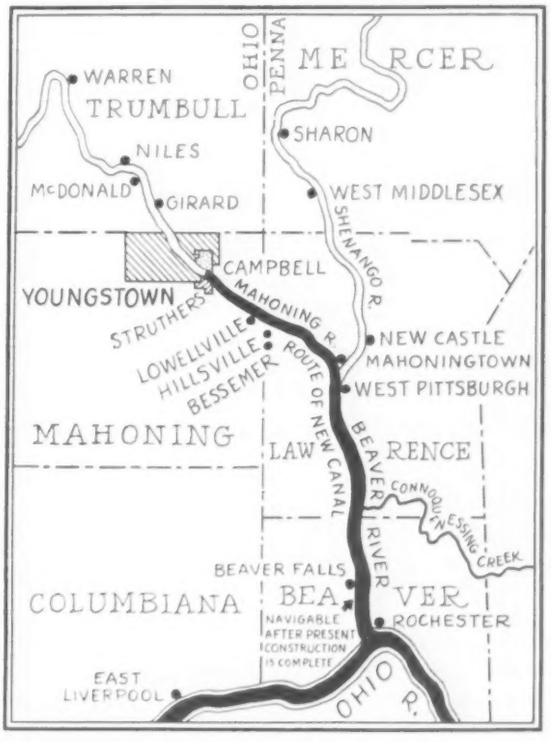
Direct water shipment of any description has thus far been impossible for the Youngstown district. It is true that with respect to both ore and coal, water-and-rail rates are obtainable to a certain extent, for parts of the hauls—but these are far higher than all-water rates and establish a substantial cost differential. The same situation is true with respect to shipments of finished steel.

Placed on Equitable Basis

It is only 35 miles up the valleys of the Beaver and Mahoning from the Ohio river to Struthers, a suburb of Youngstown. By rendering this 35 miles navigable for barges, the whole Youngstown district may be placed upon a transportation cost basis more nearly comparable to that of other major producing steel centers.

The region served by the proposed

(*Please turn to Page 75*)



Heavy black line marks the route of the proposed Beaver-Mahoning canal, which would permit raw materials to enter and finished products to leave the Ruhr of America. Mill wastes, it is figured, would keep the waterway open during the winter months. The valleys' hopes are high that at the next session of congress the necessary funds will be voted

EDITORIAL

Conflicting Interpretations Sap Strength of NRA

SO MUCH confusion has been aroused by the President's executive order of June 29 pertaining to lower prices on government work that a resume of the order and of the various interpretations of it seems necessary in order to keep the record straight.

The text reads as follows:

> "By virtue of and pursuant to the authority vested in me under Title I of the National Recovery act of June 16, 1933, and in order to effectuate the purposes of said title, it is hereby ordered as follows:
>
> "1. Any person submitting a bid to any agency or instrumentality of the United States, or any state, municipal or other public authority, to furnish goods or services at prices which, in accordance with the requirements of one or more approved codes of fair competition, must have been filed, prior to their quotation with the code authority, or other designated agency, shall be held to have complied adequately with the requirements of such code of fair competition: (a) if said bidder shall quote a price or prices not more than 15 per cent below his price or prices filed in accordance with the requirements of such code or codes; and (b) if, after the bids are opened, each bidder quoting a price or prices below his filed price or prices, shall immediately file a copy of his bid with the code authority or other appropriate agency with which he is required to file prices.
>
> "2. If upon complaint made to the administrator for industrial recovery, he shall find, after due investigation, that the tolerance of 15 per cent provided in this order is resulting in destructive price cutting in a particular trade or industry, he is hereby authorized to issue an administrative order reducing said tolerance of 15 per cent for such trade or industry to the extent he shall find necessary to prevent such destructive price cutting, in no event to a tolerance of less than 5 per cent.
>
> "3. The administrator for national recovery is directed to cause a study to be made of the effects of this order upon the maintenance of standards of fair competition in sales to public and private customers and to report to the President thereon within six months of the date of this order.
>
> "4. All prior executive orders, including Executive Order No. 6646 of March 14, 1934, are hereby modified insofar as, to such extent, they may be in conflict or inconsistent with this order."
>
> FRANKLIN D. ROOSEVELT
>
> June 29, 1934.

President Voices Thought That Order Will Extend Price Cuts To the Public

The foregoing was made public by the President at a press conference on Friday, June 29. He explained that it is an attempt to iron out a situation under which industry has been submitting identical bids on government work. He also gave the impression that lower prices quoted to the government would become effective to private purchasers. On this point, one national news service quoted the President directly, as follows: "It will give the public the same advantage as enjoyed by the government."

From this it is evident that the Chief Executive—at least tentatively—believed or hoped that the order would bring about lower prices, not only on government and public work, but also on private contracts.

This opinion was contradicted July 2, when *The Blue Eagle*, house organ of NRA, appeared with this interpretation:

> "Application of the order is specifically limited to industries which are code-bound to bid in accord with previously posted prices and it in no way alters other regulations adapting government purchasing policies to the rules of NRA codes.
>
> "The modification order does not authorize the breaking of posted open prices in bidding on private work, code regulations remaining in full control. But, for the protection of both the industry and its consumers, the order requires that whenever a firm cuts below its posted price in bidding on government work, it must, immediately after the bids are opened, file a copy of its bid with the appropriate price-reporting agency. However, the previously posted prices will remain in full force until and unless changed by their makers.
>
> "Private customers having access to the posted open prices will also have access to the filed bids and will therefore know exactly what prices are being quoted to the government and, it is expected, will guide their purchasing policies accordingly."

NRA View Is That Government Price Does Not Apply To Private Projects

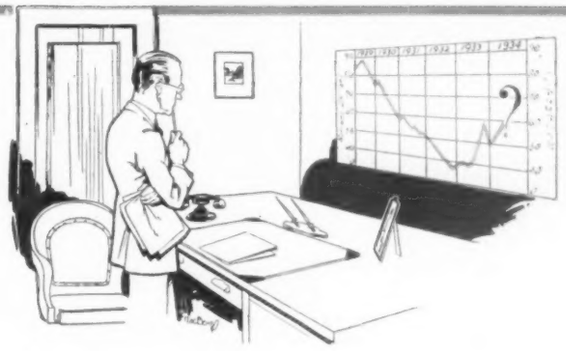
This view, while probably lacking the final stamp of official authority, seems to check with the NRA attitude on the executive order as applied to specific codes. For instance, the lumber code authority, after consulting NRA, notified its members that the executive order does not apply to lumber because "the lumber code specifically authorizes only minimum prices, established for cost protection."

While no clear cut statement has been issued to date, it is safe to assume that the President's order was tentative and experimental, and that in broadest terms its intent was to introduce more competitive bidding into government contracts without dangerously disturbing the advantages of price reporting under code provisions.

The unfortunate aspect of the move lies in the arbitrary way the order was issued. Industry was not consulted beforehand. No adequate provision for prompt interpretation was prepared. The President's view conflicts with that of NRA. Neither can be considered final.

If indecisive, tentative thrusts in the dark are to continue to mark the administration of the government's relations with business, then the days of NRA's existence as a potent supervising agency are numbered.

THE BUSINESS TREND



First Half Record Is Good Despite June Recession

MONTHLY figures for June released during the past few days furnish a number of surprises. Shipments of finished steel products by the United States Steel Corp. totaled 985,237 tons, a gain of 240,274 tons over May shipments, and the largest tonnage reported since May, 1930. The June total is at least 100,000 tons higher than the estimates of numerous observers. The sharp increase over May reflects the effect of code provisions which limit deliveries to the current quarter and of emergency purchases induced by threatened strike and price incentives.

Reports of steel ingot and pig iron output in the sixth month also presented a number of unexpected aspects. The computed operating rate on steel ingot production was 52.68 per cent, which is somewhat lower than was indicated by the majority of weekly estimates. The average daily output, which was expected to fall short of that of May by a narrow margin, actually slipped below the April figure. Average daily production of pig iron in June dropped moderately from that of May. The most significant aspect of the pig iron report was the blowing out or banking of 25 stacks in the sixth month. This was the sharpest reduction in the number of active furnaces since November, 1929.

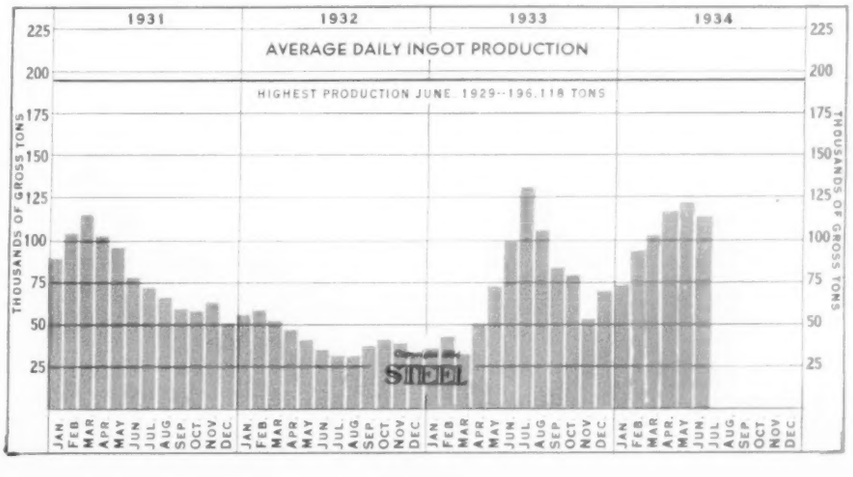
Output of automobiles in June was only slightly down from May and remained at least 25 per cent above June last year.

Record for First Half Runs Far Ahead of That for Same Period of Last Year

Complete figures for the first half show favorably in comparison with those for the first six months of 1933:

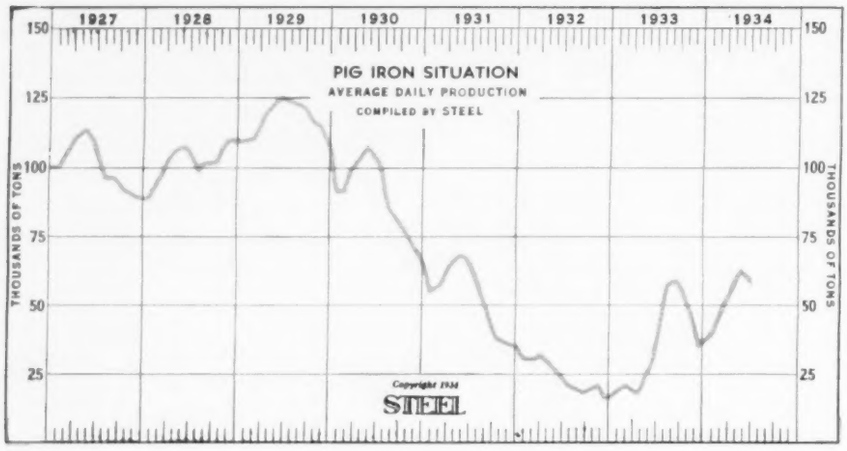
	First half 1933	First half 1934	Gain Per cent
Pig iron, tons	4,444,750	9,852,608	121
Steel ingots, tons	8,989,192	16,180,889	80
Shipments, U. S. Steel Corp., tons	2,212,420	3,678,895	66
Steel operating rate, per cent	26.62	47.11	77
Automobile output, units	1,031,839	1,802,442	75
Freight car loadings, cars	13,344,300	15,400,331	15

The monthly statistics for June show clearly that the recessions in that month were somewhat more decisive than appeared on the surface. Also, they definitely establish May as the peak month of the 1934 spring spurt in industrial activity.



1934	Tons
June	115,999
May	124,174
April	117,425
March	103,600
Feb.	92,147

1933	Tons
June	99,904
May	74,148
April	54,514
March	33,699
Feb.	45,286



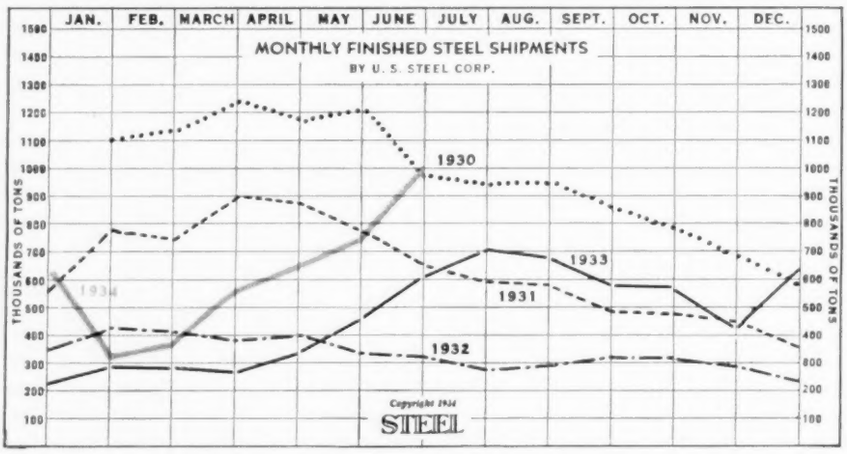
Daily Iron Output Off Slightly in June

Following six months of a continuous upward trend the average daily output of coke pig iron in the United States declined 2.72 per cent in June. The daily rate in June was 64,563 gross tons, a decrease of 1807 tons per day, from the 66,370-ton daily rate in May. The June rate compares with 57,873 tons in April and 42,165 tons in June, 1933.

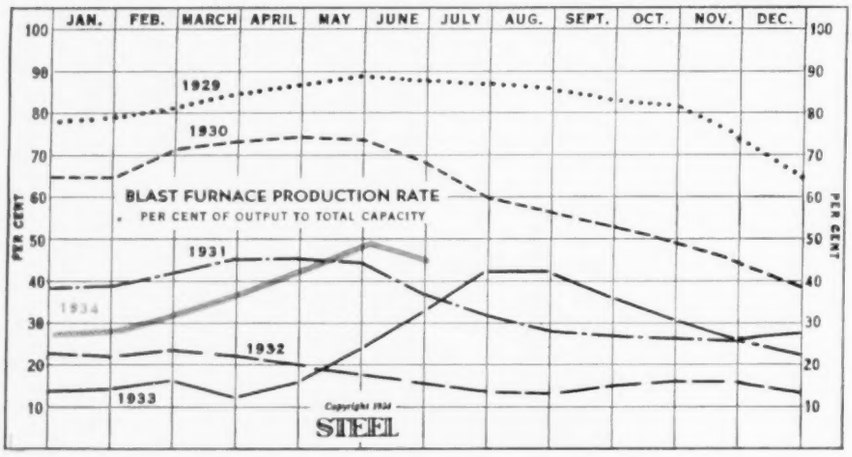
	Tons
June, 1934	64,563
May, 1934	66,370
June, 1933	42,165

Finished Steel Shipments Rise Sharply in June

Shipments of finished steel products by the United States Steel Corp. advanced sharply in June, according to the monthly report of the Corporation. The movement during the month at 985,337 tons was the heaviest since May, 1930 when shipments totaled 1,203,916 tons. The movement in June represents an increase of 240,274 tons compared with 745,063 tons in the preceding month. In June, 1933, shipments totaled 603,937 tons.



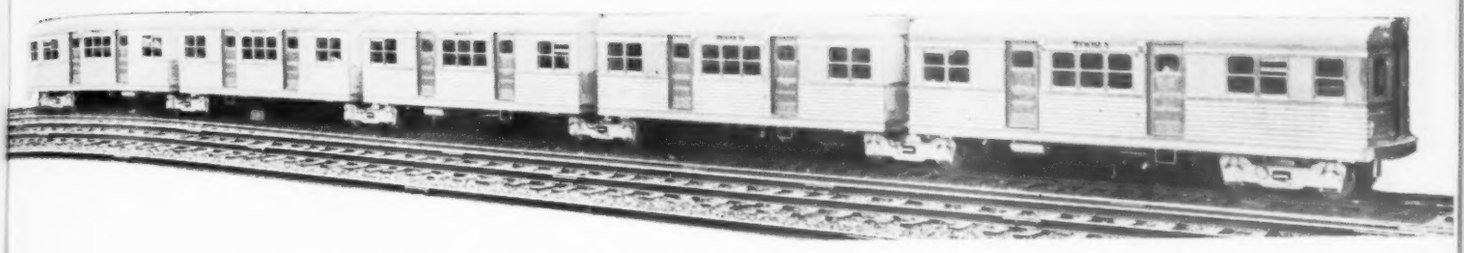
	Tons
June, 1934	985,337
May, 1934	745,063
June, 1933	603,937



	Per Cent
June, 1934	46.8
May, 1934	48.0
June, 1933	30.6

Blast Furnace Rate Falls As 25 Stacks Go Out

With iron output in June registering the first recession in six months, 25 furnaces were dropped from the active list. This was the largest decline in furnaces in any month since November, 1929, when 27 were taken off blast. Relating production to capacity, the operating rate for June was 46.8 per cent, as compared with 48.0 in May and 42.0 per cent in April. In June, 1933 the rate had fallen to 30.6 per cent. On the last day of June 92 furnaces were actively engaged.



The new five-section, stainless steel car built for subway-elevated service in New York

LIGHT-WEIGHT ELEVATED-SUBWAY CAR CONSTRUCTED OF STAINLESS STEEL

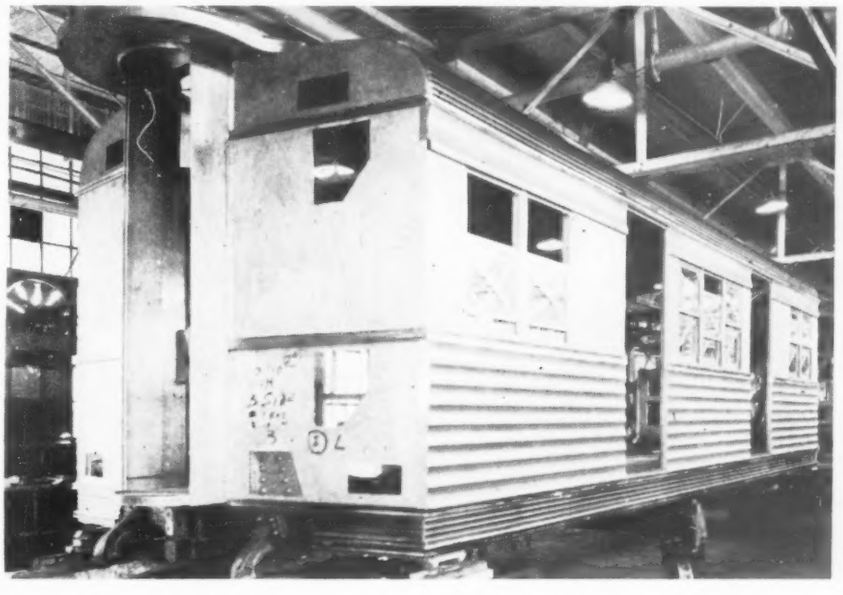
A FIVE-SECTION subway-elevated car of stainless steel, powered for an acceleration never before associated with a vehicle of any kind and braked without touching a wheel, will be delivered to the New York Rapid Transit Corp. in July. The car, built by the Edward G. Budd Mfg. Co., Philadelphia, and equipped electrically by the General Electric Co., Schenectady, N. Y., is similar in structure to the Burlington Zephyr which also was built by the Budd company.

The new light-weight car, designed to speed up local service to almost express schedule by quicker acceleration and deceleration without reinforcement of the elevated structure, was built under authorization of the Transit Commission and is to be used experimentally on the Brooklyn-Manhattan Transit Corp.'s lines to determine whether cars of this type should be placed in general service.

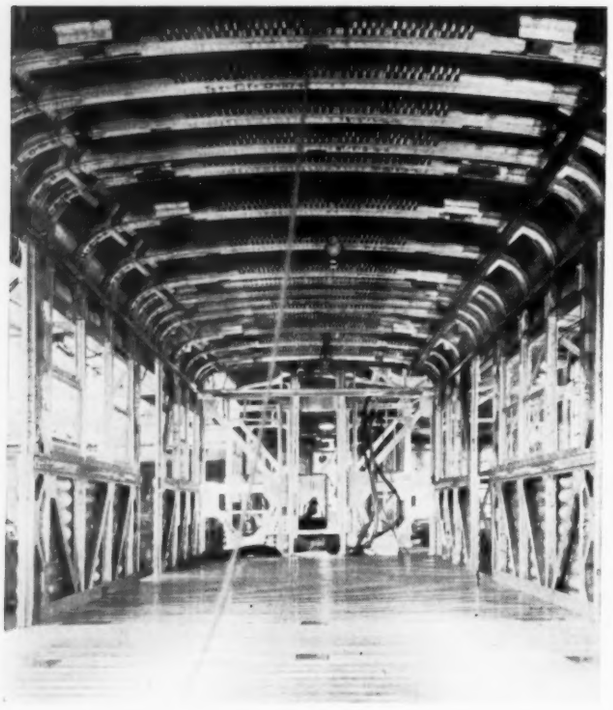
While the light weight of stainless construction and the power and braking systems are outstanding features, the car incorporates many new developments and improvements designed for economical operation and for convenience and comfort of passengers.

All trucks are mounted in rubber to deaden noise and shock. The lighting treatment is novel, all bulbs being concealed in two coves so formed and arranged that the reflected light is of equal intensity throughout the car. The necessity for crowding and jostling to get in or out is reduced by the door and seating arrangement which is such that no passenger is more than 8 feet from an exit. The floor is of inlaid cork which not only insulates against sound and cold but is easy on the feet. The heating and ventilating system has been designed so that in winter warm air is projected across the floor; in summer blowers augment the open windows in creating a comfortable circulation of air. The car has a seating capacity of 170 and a standing capacity of 470, a total of 640 persons.

In appearance, as well as in performance, the car is different from anything seen on a subway or elevated track. The exterior is of bright unpainted stainless steel; the car sections are shorter than those now in use; and they are articulated, which is to say that adjacent ends of two sections rest on a common truck, thus eliminating four trucks in a five-section car. By reason of this articulation, the



ONE of the light-weight stainless steel car sections nearing completion in the shop. In building this equipment, complete latitude in design and selection of material was allowed. The structure is composed of high-strength, cold-rolled 18-8 strip steel sections joined by shot welding



INTERIOR view of a car section showing the stainless steel construction of the roof, sidewalls and floor

several sections perform as a single unit instead of individual cars whose ends fight each other in starting, stopping and negotiating curves.

The light weight of the car—250 pounds per passenger, a figure only half as much as a comparable car of conventional design—is made possible by the Budd shot-weld method of fabricating stainless steel. By the use of this method, thin strips of stainless steel are welded into skeleton beams and other structural members and they in turn are welded into sections so that each becomes virtually one piece of steel. The result is a great reduction in weight without loss of strength.

This saving in weight makes possible a greater acceleration and deceleration with resultant quickening of schedules. With a 70-horsepower motor driving each of the 12 axles, the anticipated acceleration is 5 miles per hour per second. Articulation and new electric power control insure smoothness. Equally rapid deceleration is provided by eddy current braking.

Control Cabs at Both Ends

Using the more conservative figure of 3 miles per hour per second for general operation, the builders have estimated that the train will have an average scheduled speed of 18.75 miles an hour with a distance of 1860 feet between stops and 15 seconds per stop. Free running speed is from 50 to 55 miles an hour.

The fact that the car is intended for one-man operation largely influences the character of the appointments. All control is centralized in the two operator's cabs, one at either end, so that the operator can control motor power, braking, heating and ventilating, lighting, destination signs, and the signal system. All doors are made of high-strength stainless steel, weigh 55 pounds each and are electrically operated, a feature which is a new development of the General Electric Co.

Throughout the whole development, the guiding thought has been to permit the builder every latitude of design or selection of material. Convention has been thrown to the winds. Each item of equipment, whether old or new, has been scrutinized as to its utility. The gage has been permanence and weight. Permanence spells low cost of maintenance and high availability; weight reflects itself in almost every item of operating as well as maintenance expense.

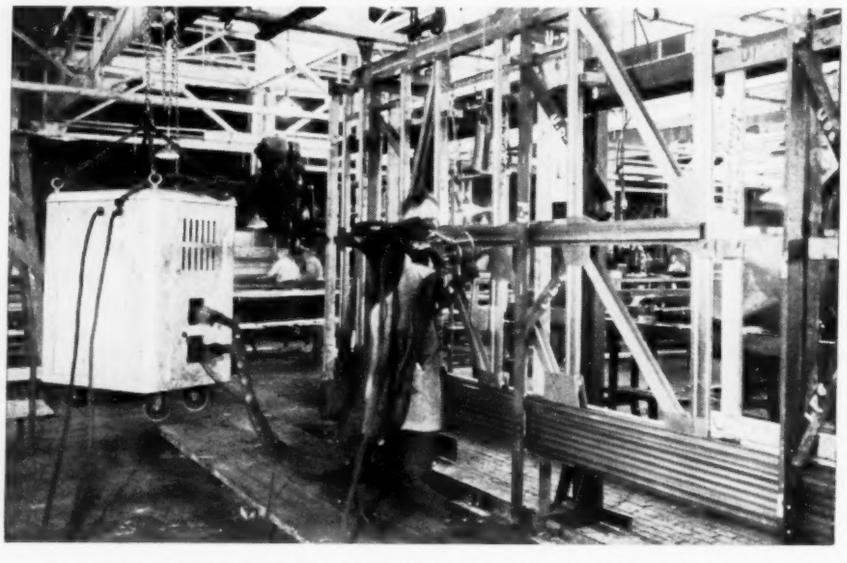
Weight saving by mere weight reduction is not to be confused with true light-weight construction. The first accomplishes the end at a sacrifice of strength and security; the latter, by proper portioning of loads to materials, can actually increase the factor of safety after a substantial lessening of weight. This involves an effective use of superior materials.

Suitable Sections Developed

Structural effectiveness results from effective placement of highly efficient sections. Effective placement merely means the putting of structural members where they may act to advantage; this permits a more sparing use of material. But, in spreading material thinly, new considerations enter the picture. A sheet of paper rolled into a small tube is a pretty stiff article; let it expand into a large cylinder and it will no longer even support its own weight. Somewhere in between these forms is a usable cross section.

One important phase of light-weight construction lies in finding just such sections. Then, when they are found, it will be discovered that their strength will vary in proportion to that of the material. In other words, an efficient section becomes more efficient as the strength of the material is increased. The combination of efficient sections and superior materials, together with effective placement of such, is, then, as previously stated, the essence of light-weight construction. It permits building lighter and stronger.

Few materials fit into all phases of



Stainless steel members are fabricated by the electric shot-weld process. The workman is shown holding the welding electrodes; transformer and control mechanism are in the box suspended from the hoist

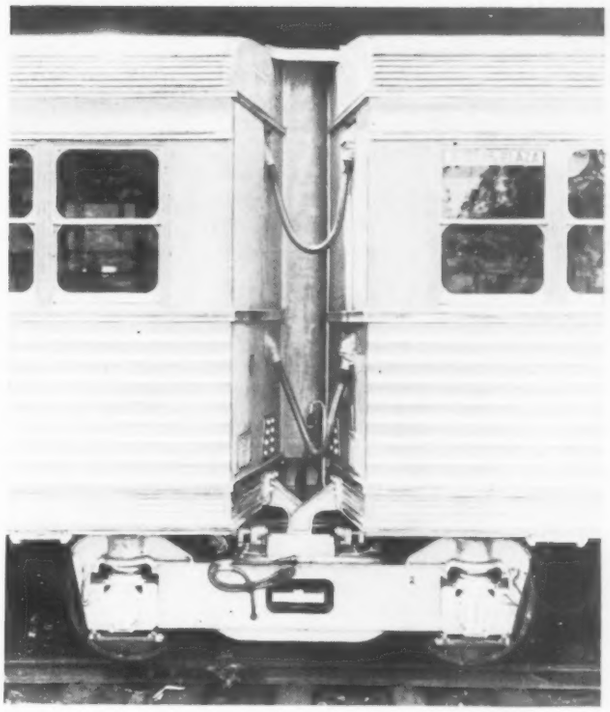
this picture. Efficient sections usually involve closed members like a tube, and these are difficult to protect against corrosion. Many metals which are sufficient in this respect lack strength or capacity for proper assembly. So far, only one material seems to combine in itself all requisites and this is 18-8 chrome-nickel stainelss steel.

This steel not only resists atmospheric corrosion but attack by most chemical agents as well. It requires no paint. By cold rolling and without heat treatment, it can be given a tensile strength superior to that of spring steel and yet retain the toughness of softer material.

Unimpaired by Shotwelding

Through the Budd shotweld system, 18-8 can be fabricated and assembled efficiently without impairing its metallurgy. The heat resistance is such that at temperatures where iron bends of its own weight, this metal still possesses the same tensile strength as mild steel, cold. Its electrical resistance is ten times that of ordinary steel, a property which, when combined with a high heat resistance, has its advantage in electrical installations. And, incidentally, 18-8 is nonmagnetic.

As used by the Budd company in car body construction, 18-8 is rolled into bright, shiny strips. The tensile strength specified is not less than 150,000 pounds per square inch. These strips come in large coils and are drawn through a series of rolls to form the required sections. Few exceed 0.050-inch in wall thickness, and some material is as thin as 0.010-inch. The sections favor squared corners instead of rounds, for it is always easier to assemble squares. Flanged channels predominate, and these are later converted to closed sections by welding cover strips over the open face.

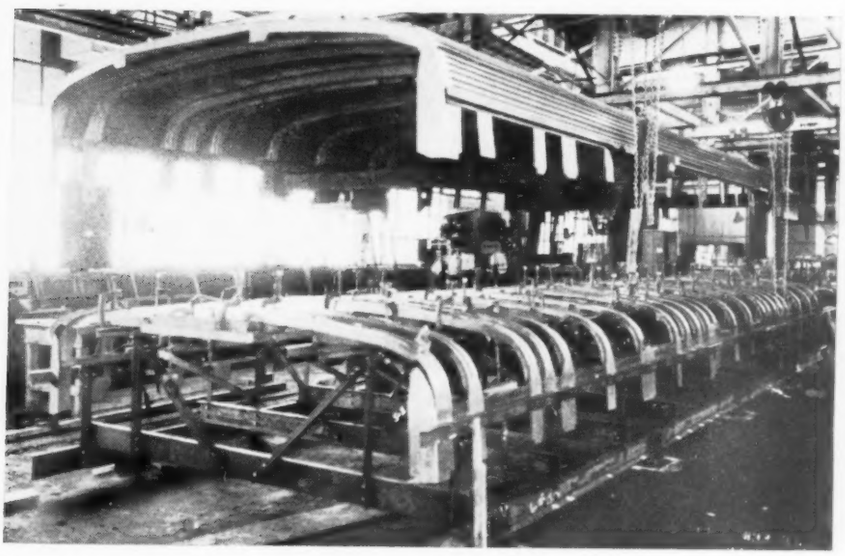


CLOSE-UP showing articulation of the units. Passengers may pass readily from one section of the car to another

The sections and methods of fabrication have been developed with a view to assembly by welding. The car structure follows a simple procedure whereby vertical or diagonal members dovetail between horizontal moldings so that all eccentricity of loading is avoided. Attachment is usually by gusset plates, and is sufficient to develop the full strength of the member.

Final assembly follows upon a series of progressive subassemblies, starting with posts, floor beams and roof carlines. The first are then organized into shear panels and later built into the side frame assembly. Roof carlines form the skeleton for a roof assembly, while the floor beams drop into place at the time of attaching roof to side frames. The end trusses complete the box. Stringers are then laid over the floor beams and four of these, two above and two below the beam, are trussed into a central compression buffing member. Above the stringers are laid corrugated flooring strips, welded to each other to form a continuous floor plate which ties into the sides and stringers.

Determination of gage and structural sections results from an elaborate stress analysis. In this, aircraft methods are largely used. Graphical determination of stresses is followed by a so-called Williot diagram which, in brief, parallels the stress diagram except that resulting deflections rather than loads are used. As soon as a complete stress diagram is available, the choice of sections becomes a simple matter of proportioning cross sectional area to load. No sections exceed 25,000 pounds per square inch, which gives a factor of safety of six.



A car roof welded into a single unit is shown suspended in the upper part of this illustration. Members for another roof, assembled and ready for wleding, are to be seen in the lower part of the illustration

Frame Is Truss System

In the Budd type of construction, the side and deadlight panels do no structural work. All shear forces are taken by a distinct truss system. This departure from conventional practice results from an elaborate study of alternate methods. An incidental advantage lies in the fact that the outer sheathing will not show the highlights and shear lines which are seemingly inevitable in flat side walls. In this particular car,

with its short length between supports and high loading per square foot of floor area, shear forces become a more serious factor than does bending, and the side framing assumes a correspondingly greater significance.

The body structure of all five sections without trim or appointments weighs some 40,000 pounds, which, when compared to the car weight of 159,000 pounds, is 25 per cent of the whole. The percentage, however, remains about normal since the urge toward elimination of needless weight has been extended into every department. A comparable train built according to convention would weigh at least 325,000 pounds.

So far the weight saving incident to the car body has been emphasized. Equally vital, though less spectacular, is that effected through a radical departure in truck design. Not only has the articulated car resulted in eliminating four trucks with a saving of some 44,000 pounds, but the remaining six trucks have been materially reduced in weight. This has been accomplished through design and material.

Cromansil Steel in Bolsters

The frame and swinging bolster are both made up of plates of steel alloyed with chromium, manganese and silicon. These are electrically welded together into a structure which is carefully proportioned to the imposed loads and which has been thoroughly annealed as a whole after completion of all welding operations. In this, care has been exercised to confine welding to places of low stress or pure shear. Toward this end, it has been necessary to cut the upper flanges of both side frames and both transoms out of a single plate. Nowhere is important welding done without there being a build-up from both sides of the web. This steel when annealed has a tensile strength of 85,000 pounds per square inch. The heaviest plate used is ¾-inch thick; the thinnest, ¼-inch.

Coil and Elliptic Springs

All trucks have a common wheel base of 6 feet 4 inches and are mounted on 29-inch wheels supported in Timken roller bearings. The pedestals rest on spiral springs, which are partially housed within the side frames. Two sets of full elliptic springs are interposed between spring plank and bolster. The swing hangers are placed unusually close to the center solely for the purpose of allowing installation of magnetic track brakes, should such be required later.

Motors are not axle hung but are supported by the transoms of the truck frame. Both eddy current and friction drum brakes are mounted on the armature shaft which is flexibly connected to the pinion of a single reduction gear. The total truck weight including brake and motor equipment for all six trucks is 73,000 pounds, which constitutes 44 per cent of the whole.

Intimately connected to the car heating and ventilating is the question of insulation. The flooring is built up on a corrugated plate of stainless steel 0.20-inch thick, which is supported by the longitudinal stringer system. On the upper side, the corrugations are filled with strips of cork over which are laid ½-inch cork tiles. This makes for a warm, comfortable floor of high wearing quality.

Side walls and ceiling are insulated by four layers of crumpled aluminum foil laid between the outside sheathing and the inner trim. This material owes its insulating property to the fact that heat may b reflected in the same manner as light. The weight of aluminum for the entire car is only 100 pou A further insulation advantage had from the bright, unpainte stainless steel external surface of th car. Heat directed upon the surface re-radiates; given proper conditions of atmosphere and dark background heat waves rising for some 15 f above the car roof can be observ plainly.

Total train weight, light, is 159 900 pounds, of which electrica equipment accounts for 46,00 pounds; body structure, 38,000 pounds; body appointments, 18,600 pounds; control conduits and ducts, 10,300 pounds; and trucks, 47,000 pounds. Total passenger capacity load is 89,600 pounds.

The interior of the car is light, cheerful and roomy. Here is illustrated one end of the forward section; the door leads to the operator's cab

Iron Microstructure at High Temperature Is Studied

Several years ago an apparatus was developed at Harvard university by Dr. B. A. Rogers, now a research associate at the national bureau of standards, Washington, which permitted the direct observation of the microstructure of iron at high temperatures, even up to the melting point of the metal. This apparatus is now being applied to the study of the austenitic grain size in carbon tool steel in a current research project at the bureau.

While it is possible to maintain a bright, clean surface on a specimen of pure iron in this high-temperature metallographic microscope by passing hydrogen through the inclosed specimen chamber, it is not permissible to use hydrogen when the specimen under examination is carbon tool steel because of the rapid loss of carbon caused by the hydrogen. The examination of the carbon steels is being carried out in an atmosphere of mixed carbon monoxide and carbon dioxide and in an atmosphere of helium as well.

Census of Engineers Made

Graphic analysis of the number, class and distribution of engineers in the United States has been compiled by the American Engineering council, Washington. Data have been summarized on a chart, 11 x 17 inches in size. Figures show that the total number of technical engineers as of the 1930 census was 226,136; total number of individual engineers holding memberships in engineering and allied technical societies as of 1929 was 115,205; total number of memberships in engineering and allied technical societies as of 1929 was 146,669.

Porcelain enameled steel, glass and extruded aluminum shapes combine to give striking appearance to this service station recently built in Warren, O.

Modern Metals Lend Beauty, Utility to Gas Stations

GASOLINE service stations, probably more than any other type of building, have been leading the way toward acceptance of modern building materials and methods. Remarkable increases in gallonage handled have been effected simply by altering the design of an old station to conform to present-day concepts; and those who are behind this movement claim the surface has only been scratched and that unlimited possibilities exist for widespread adoption of modern, metallized architecture. The time is seen not far distant when the movement will spread to residences, for proof of which witness the popular interest in the various types of steel houses at *A Century of Progress* in Chicago, many of which have been described from time to time in these pages.

New Construction Method

Steel, aluminum and glass are the basic materials of the new motif in service stations. Several systems of combining these materials for attractive appearance have been developed, one of the most recent being that shown in accompanying illustrations and pioneered by Functional Buildings Inc., Cleveland. The illustrations show views of a recently completed service station in Warren, O. The construction method is claimed to provide speed of erection, movability, salvageability and economy, without placing limitations on distinctive and individualized designs.

The building embodies a structural steel framework to which are attached horizontal strips of special extruded aluminum shapes. These strips have slots top and bottom into which panels of glass or porcelain enameled steel fit. Special extruded shapes are provided for carrying the trim around doors, corner posts, ventilators, windows, and roof cornice. If desired, these mounting and trim strips may be of stainless steel. Horizontal strips are of H-section with the outer flange turned over at the top and bottom (see inset in accompanying illustration). The space below the web is twice as deep as that above, permitting panels to be slipped into place after the strips are in position. Vertical joints between panels are covered by aluminum strips which fit into the slots in the horizontal strips.

The slots are filled with a mastic material such as aluminastic, to provide for expansion and contraction of the enameled steel panels and prevent any wrinkling of the exposed surface on this account. Porcelain enamel in any colors may be used, with single or double faced enamel finish as desired—fired on 18-gage

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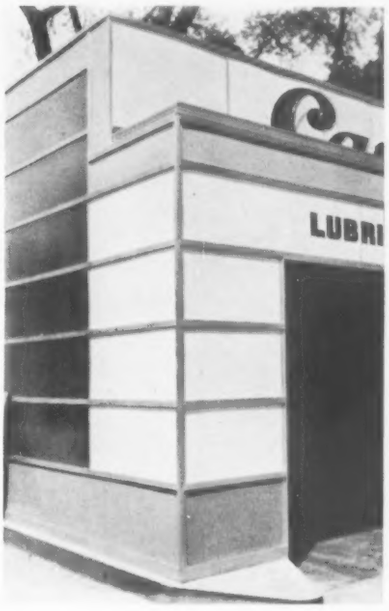
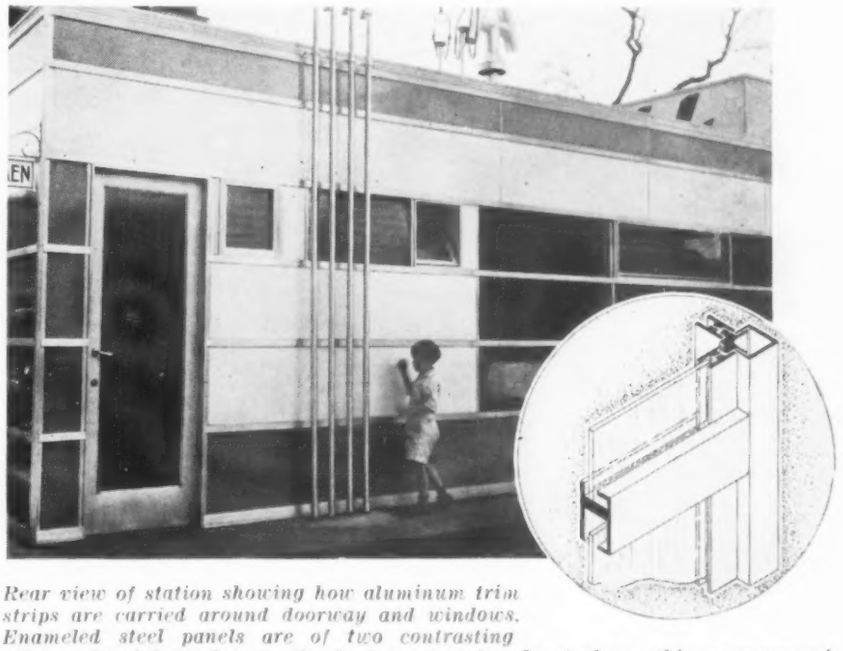


Either steel or glass panels may be mounted in the longitudinal strips. Note raised foundation and setback design of roof



Rear view of station showing how aluminum trim strips are carried around doorway and windows. Enameled steel panels are of two contrasting colors, glazed into slots in the horizontal strips. Inset shows this arrangement, also special extruded aluminum shapes used for corner post and vertical dividers

Making the Most *of* METHODS AND MATERIALS

Holes in 2-Inch Deck Armor Cut by Motorized Torch

In the construction of new navy cruisers, the shipbuilder was required to cut about 75 hatch holes in the deck armor which consisted of 2-inch special steel plates. To have machined these holes would have cost about $75 each, therefore, the oxyacetylene process was adopted. With the use of a motorized torch operating on a special templet and using special four preheating flame bent tips, it was possible to make perfect cuts. The holes were 36 x 42 inches and had to be beveled on a 45-degree angle with a 4½-inch radius in the corners. It was practically impossible to make satisfactory cuts with low pressures, such as 35 to 50 pounds; the problem was solved by using pressures of 75 to 80 pounds and speeds on the straight cutting of 8 inches per minute and 9 inches on the radius cuts.

$ $ $

Certain of the newer models of complete oil burner units have included cast boilers, while others have boilers of fire-box steel plate. Each type of boiler is recommended strongly by its particular sponsor. The engineering staff of one large producer of various types of equipment is said to have been almost equally divided on the question of cast metal and rolled steel; but the final count was slightly in favor of the latter.

$ $ $

Method of Glass Lining Steel Tanks for Breweries

Return of legal beer has focused attention on glass lined steel tanks in which the beer is brewed and stored. One method of lining the tanks with glass is of interest. The interior of the tank is sandblasted and sprayed with molten glass, using a special gun somewhat similar to the oxyacetylene metal spraying gun. After spraying, the tank is placed in a large furnace and heated to a high heat; the fires are drawn and the tank allowed to cool. After this operation, the glass lining possesses such elasticity and adhesion that it cannot be cracked or chipped off by hammering with a hardwood mallet, nor by bending within the elastic limit of the steel plate.

$ $ $

Chromium Obviates Use of Metal Chills in Castings

Metal chills for iron castings can sometimes be eliminated by the use of small amounts of chromium. It is the usual custom when the iron is running too soft to increase the surface hardness where necessary by chilling with metal chills. Addition of small amounts of chromium will likewise impart the desired hardness to the castings and this can be done conveniently through ladle additions of ferrochromium. One per cent usually is sufficient to produce hardness throughout the casting, though the effect of the chromium is some-

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ALL-STEEL AIRPLANE RETURNS TO AMERICA: After two years exhibition in Europe, this four-place amphibian, claimed to be the first all-steel plane built, is back in the United States. Arriving in New York a few days ago on the ROMA *from Italy, it flew immediately to Roosevelt Field. Property of the Edward G. Budd Mfg. Co., Philadelphia, the plane was built three years ago to demonstrate practicability of the company's shot-weld process for fabricating stainless steel, the process recently employed in building the Burlington Zephyr, the lightweight streamlined train. After a flight around the United States, it was sent to Europe where it aroused the interest of air forces and navies of several countries, including Italy, France and England. As a result of its study, stainless steel was used in parts of the ship which Balbo flew to the United States last summer at the head of a fleet of Italian planes. Lately the plane has been in the service of the Savoia-Marchetti Co. which has been licensed to manufacture it in Italy. This company has received a number of orders which are now in production. The Potez Airplane Co. in France and the Pressed Steel Co. in England also are licensed to build the plane in their respective countries. Upon its return to the United States, the ship was turned over to Fleetwings Inc., Roosevelt Field, New York, licensee of the Budd company*

DEPENDABILITY

WE would be lost without the things in life that we take for granted—that we accept without question.

Our customers after 37 years of experience take it for granted that they get *good strip steel* from West Leechburg—they are not disappointed—promises are kept and quality is assured. Nothing exceptional is offered them, just day-in-and-day-out service that leaves them free to worry [if they must] about other things rather than strip steel. Will you join our "satisfied customer" group?

We also roll and sell ALLEGHENY stainless. All grades in strip form.

HOT AND COLD ROLLED WILSCO STRIP STEEL

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what influenced by the original analysis and structure of the iron. This method of imparting hardness to castings is very flexible and often results in considerable savings due to elimination of metal chills.

\$ \$ \$

Factors To Be Observed in Welding Rustless Steel

Successful oxyacetylene welding of high chromium stainless and rustless steels and irons depends chiefly upon certain particular factors. It always is necessary to have a clean surface on the base metal and either a rod of the same composition of the base metal or another which is known to produce the desired results. A neutral flame is recommended except in specific cases, although a flame with a very slight excess of acetylene may be used. A flux with special characteristics is necessary.

\$ \$ \$

Oil-Hardening Alloy Steel For Gears Recommended

For spiral and herringbone gears up to 12 inches diameter which must be oil-hardened to about 400 brinell, a nickel-chromium-molybdenum steel such as the following is recommended: Carbon 0.45-0.55, manganese 0.45-0.75, nickel 1.60-2.00, chromium 0.60-0.90 and molybdenum 0.20-0.30 per cent. This steel may be oil hardened and drawn to 400 brinell without difficulty and a minimum of distortion. In smaller sizes, the necessary hardness can be obtained with S. A. E. 3340, 3250 or 2350.

\$ \$ \$

Steel-Frame Houses Provide Advantages Despite Cost

Within the past four years a number of steel framed dwellings have been erected in which the steel cost twice as much as the lumber which it replaced, but in the total cost of the house the increase amounted to between 5 and 10 per cent. This is not an excessive price to pay for steel framing which provides security from vermin, eliminates plaster cracks, and the many other ills which attend the so-called settling in houses framed with lumber.

\$ \$ \$

One automotive manufacturer has had considerable success with the operation of shearing the hot flash from butt welded wheel rims with stellited trimming tools. The welding rod is deposited with the blowpipe on the working edges of the dies. The wheel rims are trimmed red hot and 300 pieces per grind was a good run when steel tools were used. Hard faced tools now are giving 3000 or more pieces per grind. When the faced edges finally are worn down, they are refaced and ground to standard thickness.

\$ \$ \$

Over 1000 cast-iron lighting and signal poles in one city were sprayed with bronze by the oxyacetylene metal spray process. These poles have been in service more than six years. This method of finishing has completely eliminated all paint and maintenance costs and gives equal results and appearance to that of solid bronze.

\$ \$ \$

Solubility of copper in cast iron alloys is influenced greatly by the presence of other elements. With from 12 to 15 per cent nickel, as much as 6 to 7 per cent copper is dissolved readily and an alloy containing those proportions of the two elements is one of the most important of the austenitic cast irons. Ordinary cast iron will dissolve between 3 and 4 per cent copper.

\$ \$ \$

A manufacturer of cast-iron electric outlet boxes formerly had a large inventory made necessary so as to satisfy the peculiar needs of different parts of the country. By altering the base design, he was able to attach outlets by bronze welding as desired and lowered the overall cost and inventory.

\$ \$ \$

Gas welding of steel hoisting cable ends prevents the cable from unraveling and presents a neat, compact appearance.

Bumper-Type Steel Plate Road Guard Bolted to Spring Supports

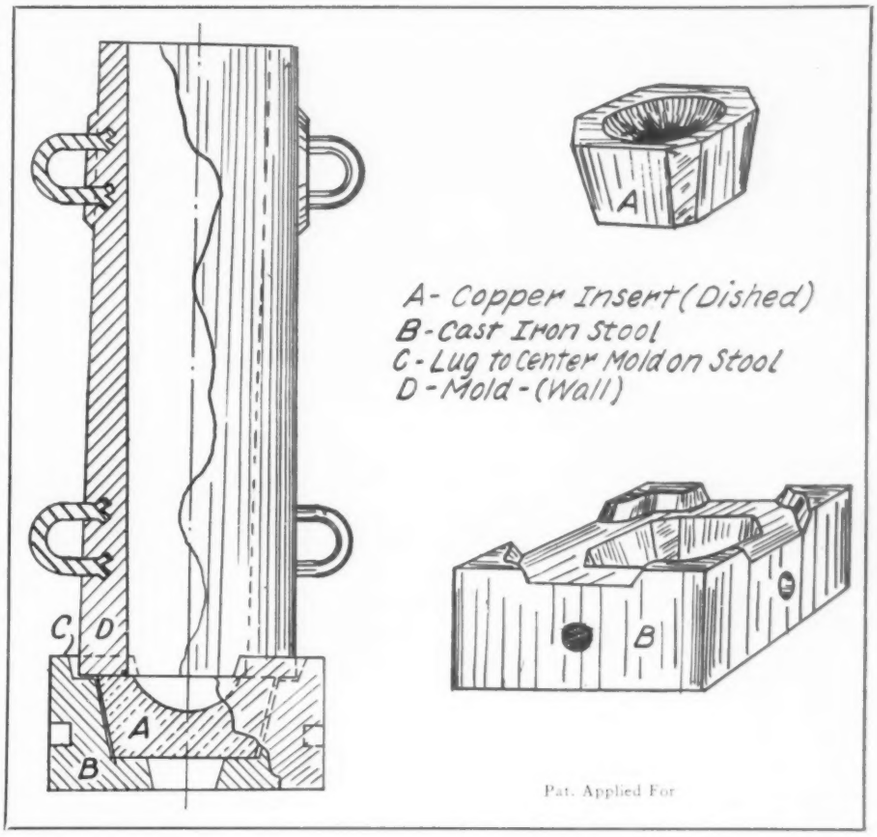
FURTHER progress toward adequate protection of the nation's highways is indicated by the constant development and adoption of improved types of highway guards, in which steel is the shock-absorbing material. Survey of the potential market for road guards (STEEL April 16, p. 27) reveals an outlet for millions of tons of steel in the form of a continuing market, not only for replacing obsolete types, but in supplying new and modern requirements as road improvement is extended.

Already in use in many states are several types of steel guards, including three general classifications—wire mesh, cable and steel plate. The latter type is characterized by its resiliency and ability to deflect motor cars back onto the roadway. Plate guards present a broad, smooth surface, do not splinter or entangle cars.

California state highway motor patrol officials inspecting a section of the new convex bumper-type steel highway guard

Copper Inserts in Stools Reduce Mold Cost and Produce Better Ingots

A new stool with a copper insert has been developed by Vulcan increasing materially the life of ingot molds and producing uniformly better ingots. In actual service these stools have lasted from several hundred to 1,000 heats on molds from 9 to 22 inches square. When scrapped the inserts may be recast into the original shape at small cost. It can be used with either big end up or big end down ingot molds.



Longer Life for Ingot Molds

The dished shape of the copper insert throws the hot metal away from the mold walls on the initial pour preventing splashing which causes the common surface cracks. This shape also prevents cutting of the mold at the bottom which often happens with flat top stools. The ordinary failure of stools and bottoms of plug or closed end molds is eliminated. The high heat conductivity of the copper produces prompt solidification without the usual cutting or welding.

Better Ingots

The hot metal being thrown away from the ingot walls produces a better surfaced ingot with less defects due to pouring.

The rounded butt end of the ingot reduces butt cracking.

Fins on the ingot are eliminated as the mold resting directly on the copper insert makes a sealed joint.

Savings

Longer life for ingot molds—less mold failures and stool losses. Easily stripped ingots—no stickers—quicker delivery to the soaking pit—less lost heat.

The use of inserts provides the advantages of copper in pouring without the high cost involved in complete copper molds or bottoms. Low copper "inventory" for the large user.

Result—Better ingots at lower cost.

For more particulars ask

VULCAN MOLD & IRON CO.

Latrobe, Pa.

Patented features on a number of types involve special methods employed for attaching the plates to posts, so as to obtain longitudinal play over a large part or all of the length of the guard.

In 1933, two million lineal feet, or approximately 5000 tons of steel plate guards were sold and installed by various state, county and municipal highway departments.

Latest type of steel plate road guard to make its appearance comes from California and is known as the U. S. Tuthill bumper-type steel highway guard rail, manufactured by the United States Spring & Bumper Co., Los Angeles. As shown in accompanying illustrations, the guard is a rounded plate of tempered steel, 12 inches in width, bolted to a heavy leaf spring which in turn is fastened to 8 x 8-inch wood posts, anchored 6 feet under ground. The spring holds the rail about 7 inches in front of the posts at a height just above the hub caps of a vehicle on the road.

Shocks Transmitted to Ground

Thus a convex surface is presented to passing cars which, should the cars get out of control and leave the road, meets the vehicle at a point shown to be that of greatest horizontal inertia in the average automobile. Sections of the guard rail are about 10 feet long and are overlapped at their ends in the direction of passing cars. Bolt holes in the plate are slotted to provide maximum flexibility when the guard is struck. The spring steel support for the rail is bolted to the post close to the ground level, tending to transmit shocks quickly to the earth where they are absorbed quickly and effectively.

Some interesting tests were made recently on the new guard rail before a representative group of traffic and highway officials in Los Angeles. A 300-foot section of the guard was installed on a sharp curve at the foot of a steep, winding grade. Old cars, piloted by racing drivers, were driven into the guard rail at speeds up to 45 miles per hour, striking at various angles to determine the effect. The deflective action of the steel rail diverted forward motion of cars back onto the highway with little damage to either the rail, or cars, other than dented fenders or running boards. Cars were skidded and sideswiped into the guard, in all cases being deflected back on the road with little damage. In cases where the guard rail was bent by the force of a heavy impact it was shown to be but a matter of a few minutes to remove the damaged 10-foot section and bolt a new section in its place.

Among states which have installed this new highway guard on road projects are Illinois, Massachusetts, Vermont, Virginia, Indiana, Missouri, Michigan, Florida, North Carolina, New Mexico and Pennsylvania.

Rear view of guard, showing how curved rail is mounted on spring leaf arms bolted to posts. In the background a speeding sedan, out of control, is about to crash into the guard in a service test

New Standards for Welding Apparatus Now Available

Copies of the recently approved American standards for "Electrical Arc Welding Apparatus" and "Electrical Resistance Welding Apparatus," designated as C52.1-1933 and C52.2-1933, respectively, are now available in printed form from the American Standard association, 29 West Thirty-ninth street, New York. The former sells for 40 cents per copy and the latter for 30 cents.

These standards cover the general conditions upon which acceptance tests are based for the direct-current generators, motor-generator sets (including dynamotors), alternating-current transformers and resistors used in electric arc welding, and the transformers used to supply current for the following types of resistance welding apparatus: Butt, spot, seam and percussive.

The standards were developed by a sectional committee under the joint sponsorship of the American Institute of Electrical Engineers and the National Electrical Manufacturers association. They constitute a revision of the former A. I. E. E. standards on the same subjects. The committee which was in charge of the development of the standards was made up of representatives of five producers, six consumers and eight general interests.

The standards are so framed as to insure, if they are followed in the manufacture of welding apparatus, that an adequate and properly controlled supply of electrical current will be provided to meet the exacting requirements of present-day welding service.

New Metals Lend Beauty, Utility to Gas Stations

(*Concluded from Page 27*)

enameling steel sheet. The design permits interchangeability of glass and steel panels, both being glazed in place.

The method of construction is sufficiently flexible to provide practically unlimited architectural possibilities, while the mass production of interchangeable units to special design keeps costs down. Buildings are designed with the service floor area 6 inches below the sales room floor level to permit practically level access from an outside yard, at the same time allowing concrete foundations for the building to be 8 inches above the driveway level for protection from traffic. This detail also provides bumper protection at all driveway doors.

In the building illustrated, approximately 5 tons of steel was used, mainly in structural steel framework and enameled steel wall panels. This structure is designed with a single wall, although a double wall may be used, if desired, the same finishing method being employed on the interior. This permits the space between walls to be used for insulation and electrical conduits or utility lines.

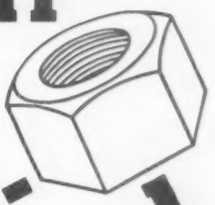
Modernizing Old Buildings

The method also is applicable to the resurfacing of old buildings, the aluminum strips being attached to the old surface by means of such fasteners as screw nails. In this case the horizontal strips are of slightly different section to allow for nailing onto an old wall. After they are mounted and the wall panels are set in place, cover strips are snapped over the panel supports to cover up the heads of fasteners which are driven through the horizontal strips, providing smooth exterior surface.

Since all exposed surfaces are of enameled steel, aluminum or glass, no maintenance is required other than an occasional washing off with water.

This construction method is claimed to be ideally suited to the requirements of a steel house and plans are now under way for the erection of a small residence building using this system. Many variations in design are possible which it is said offer opportunity for relieving the severe lines often noted in steel houses.

A different kind of Nut... A stronger, tougher Nut



Hot-Forged

NOT all applications call for the Bethlehem Hot-Forged Nut. But there's many a brutal task where nothing else will do. Wherever severe wrenching strains are involved, wherever the nut must be drawn up tight, so that it will stay tight, the Bethlehem Hot-Forged Nut is emphatically the one to use.

Don't imagine it's just an extra-good nut, manufactured in the ordinary way. The Bethlehem Hot-Forged Nut is made by a new, exclusive process. It's a forging, and has the dense grain structure that forging gives. The threads are so strong, so tough, that they stand up without stripping under the heaviest kind of duty.

Bethlehem engineers who are specialists in bolt and nut manufacture developed and perfected the Bethlehem Hot-Forged Nut. It is made in our Lebanon, Pa., Plant, a large, self-contained Bethlehem division devoted wholly to the manufacture of bolts and nuts and related products.

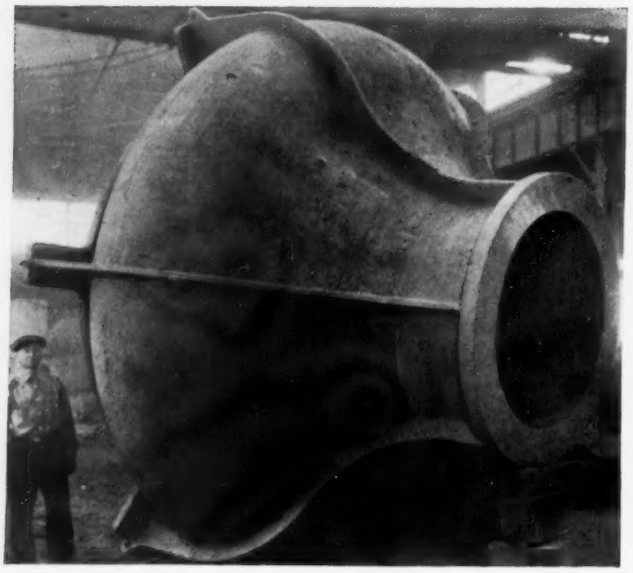
Lebanon Plant products include all kinds of bolts, of carbon, alloy, and corrosion-resisting steel. All kinds of nuts, too, as well as the hot-forged. Also rivets, spikes, turnbuckles, etc. For service to you, Bethlehem carries at Lebanon Plant an extensive range of standard commercial items ready for immediate shipment.

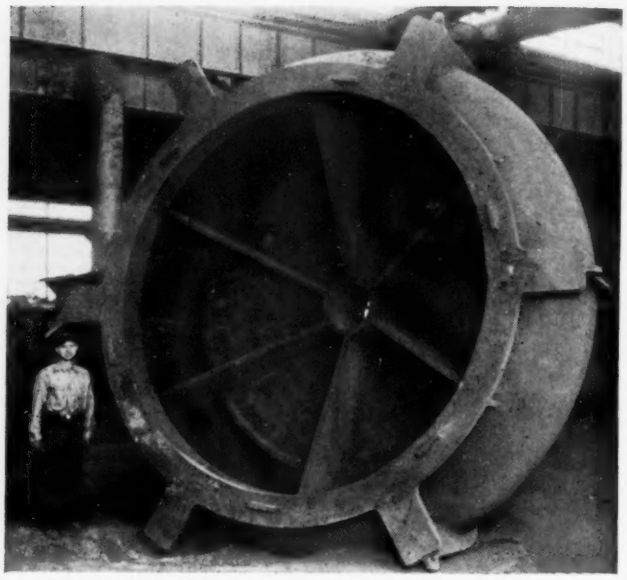
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

District Offices: Atlanta, Baltimore, Boston, Bridgeport, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Houston, Indianapolis, Milwaukee, New York, Philadelphia, Pittsburgh, St. Louis, St. Paul, Washington, Wilkes-Barre, York. *Pacific Coast Distributor:* Pacific Coast Steel Corporation, San Francisco, Seattle, Los Angeles, Portland, Honolulu. *Export Distributor:* Bethlehem Steel Export Corporation, New York.

BETHLEHEM STEEL

Bethlehem Bolts and Nuts

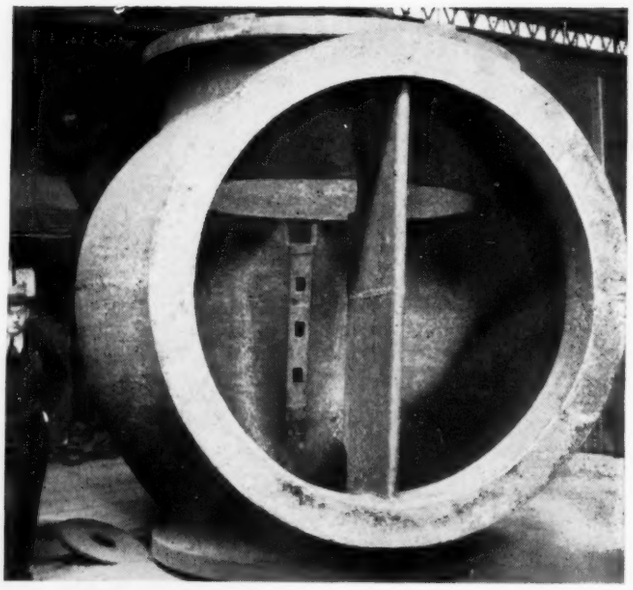


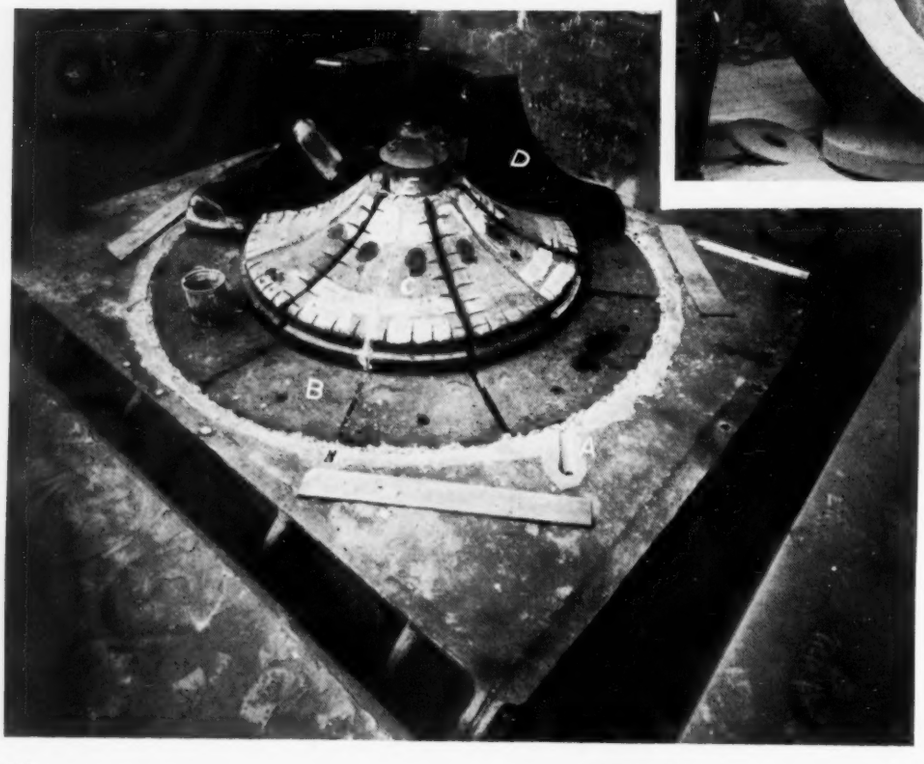


Produces Unusual Castings for Boulder Dam

ONE of the interesting contracts for equipment and machinery required in the operation of the Boulder Dam power project is for the mechanism which controls the flow of water after it leaves the turbines. This involves the large steel castings, shown in the accompanying illustrations, which were made at the plant of the Machined Steel Castings Co., Alliance, O.

A hydraulically-operated piston works inside the three-way globe relief valve, shown at the upper right in the lower illustration, which in turn is mounted on the energy absorber, shown in two positions at the top of the page. The solid column of water falls on the cone diaphragm which absorbs the shock and discharges the water in a comparatively thin stream around the lower perimeter. The steel employed in the castings was





melted in one of a pair of 25-ton, acid-lined, oil-fired, open-hearth furnaces. For the energy absorber castings, with a total weight including gates and risers of nearly 70,000 pounds, this meant an overload of 40 per cent over the normal capacity of the furnace. The metal was plain carbon steel showing a tensile strength of 70,000 pounds per square inch, carbon 0.28 per cent and manganese somewhat higher than usual, 0.80 per cent. A bend test piece from this steel readily is bent completely around a 1-inch pin without any sign of surface fracture. The casting was subjected to 500 pounds per square inch water pressure test.

Estimates Steel Supports In British Coal Mines

THE total quantity of steel supports installed in coal mines in Great Britain is estimated to be 640,200 tons, equivalent to 1 ton of steel to every 340 tons of output, and each year about 1 ton of steel is sent into the mines for every 2500 tons of output. These interesting figures were contained in a paper, "Steel Pit Props and Mine Arches," which Prof. S. M. Dixon and Major H. M. Rudspeth presented before the International Congress for Steel Development in London, June 20-23. A brief report of this congress appeared on page 25 of the June 9 issue of STEEL.

These estimates of steel supports, according to the authors, make no allowance for replacement of lost or damaged supports but only for supports used in new work. Hence, if an allowance of 10 per cent be made for lost or damaged material, or 64,000 tons, the estimated total annual consumption approaches 150,000 tons.

Collieries Are Heavy Users

It should be noted, however, that the amount of steel used by large modern collieries is about five times the average for the whole country. At a number of large collieries the quantity of steel used during the period of installation of steel extending over several years, was about 1 ton of steel per 500 tons of output.

From a study of all the information available, it appears that at the end of 1933 the length of roadway lined with steel arches in Great Britain was not less than 2000 miles, and was increasing at the rate of about 300 miles a year. Assuming an average of 250 tons of steel per mile, equivalent to a 10-foot roadway lined with 4 x 2½-inch or 4 x 2-inch arches 2½ feet apart, a total of 500,000 tons is obtained, this being an annual increase of 75,000 tons.

The number of steel props in use at the end of 1933 probably was not less than 75,000 and is increasing at the rate of about 100,000 a year. Assuming length of prop of 4½ feet and an average weight of 15 pounds per foot, or 33 props to the ton, the total of steel is 22,700 tons. The annual increase is 3030 tons.

Cambered girders are not so extensively used as arches and the length of roadway lined with them may be put at not less than 75 miles and the annual increase at 12 miles. Assuming the girders to weigh 100 tons per mile, the total quantity in use is 7500 tons and the annual increase 1200 tons. The length of roadway lined with straight girders may be as much as 1000 miles, but the figure does not seem to be increasing so rapidly as that for arches. It is difficult, state the authors, to arrive at a fair average weight for straight girders in view of the variations in sizes and spans, but if 100 tons of steel per mile be taken the total quantity is 100,000 tons. The estimated quantities of steel in use at the end of 1933 are summarized in the table.

Present coal output in Great Britain is about 220 million tons per year, and based on this figure the authors estimate future demands for steel. With modern methods of mining, output is obtained by the intensive working of a few compact districts and the tendency is to reduce the length of roadway in use. Hence, in attempting to forecast the quantity of steel which might be used it would not be accurate to take this as the quantity required to line all existing roadways which require support, since at the present rate of introduction of steel supports the total length of roadway in use will be very considerably reduced before all the roads have been lined.

The only estimate of the relative length of lined and unlined roadway is that for South Wales where 21 per cent of the roads have been arched. Although steel arches are used extensively in the other coal fields it is doubtful whether the proportion for the whole country is so high, and it seems more likely that at the present time only one-eighth of the total length has been supported on steel.

In view of the probable reduction in the length of roadway to be supported it seems reasonable to assume that about one-quarter of the total length to be lined with arches already has been done, leaving approximately 1½ million tons of arches to be installed.

The quantity of steel props which might be used may be calculated from a consideration of the amount of coal which can be won in a year with one ton of props. This figure naturally varies with the working conditions but it is suggested that 2000 tons output per ton of props is a fair average value. On this basis a maximum of 110,000 tons of props would be required. It may be taken that steel lids and bars would amount to about 50,000 tons.

Annual Tonnages Required

A tentative estimate of the amount of steel which would be needed to install these maximum quantities of steel supports can be made by assuming the installation to be spread over a period of five years, and making due allowance for the replacement of lost or damaged supports. The allowances are: Arches, 7.5 per cent; props, 40 per cent, and lids and bars, 50 per cent, of the quantity in use, lost or destroyed.

The estimated annual amounts are as follows: Arches, 365,000 tons; props, 50,000 tons; and lids and bars, 25,000 tons; making a total of 450,000 tons for 5 years, or 1 ton of steel per 490 tons of output. It will be noticed that this quantity is practically the same as that used by several modern collieries during the period of installing steel supports. If some pits find it profitable to install 1 ton of steel per 500 tons of output, it would seem that this is not an unreasonable figure to apply to the remainder.

When the installation was completed, the annual consumption in replacement of lost and damaged supports might amount to: Arches, 150,000 tons; props, 44,000 tons, and lids and bars, 25,000 tons, making a total of 219,000 tons per annum, or 1 ton per 1000 tons of output.

Steel Supports Installed In British Coal Mines

	In use at end of 1933, tons	Annual increase, tons
Steel arches	500,000	75,000
Cambered girders	7,500	1,200
Straight girders	100,000	5,000
Steel props	22,700	3,030
Straps, bars and lids	10,000	2,000
Totals	640,200	86,230

Prepares Film on Welded Pipe Line Construction

A new educational motion picture portraying the construction of arc welded oil and gas pipe lines has been prepared by the Lincoln Electric Co., Cleveland, and is available for loan upon application to the company.

The film, entitled "Shielded Arc Welding of Oil and Gas Lines," tells a graphic story of how pipe lines are built from the time the pipe arrives from the manufacturer, through each successive step to completion. Procedure of firing line and bell hole welding is shown in detail. Operations on recent pipe line projects were photographed in order to illustrate the most up-to-date methods of construction.

• HANDLING WASTE ACID

New use of Goodrich rubber lining conquers costly problem in acid handling

VULCALOCK Rubber Lining in their pickling tanks proved so outstandingly successful that Inland Steel welcomed the Goodrich suggestion that the same type of lining be applied to their acid sewer.

Chemical stoneware, sawdust packing, pitch covering, everything else had been used, but leakage continued. Leaking acid seeps into the earth, attacks the minerals in the soil, and this causes floors, machinery, even walls to settle or heave. No way had been found to prevent this insidious danger—until rubber lining, applied to a steel sewer by the Vulcalock bonding process, was introduced.

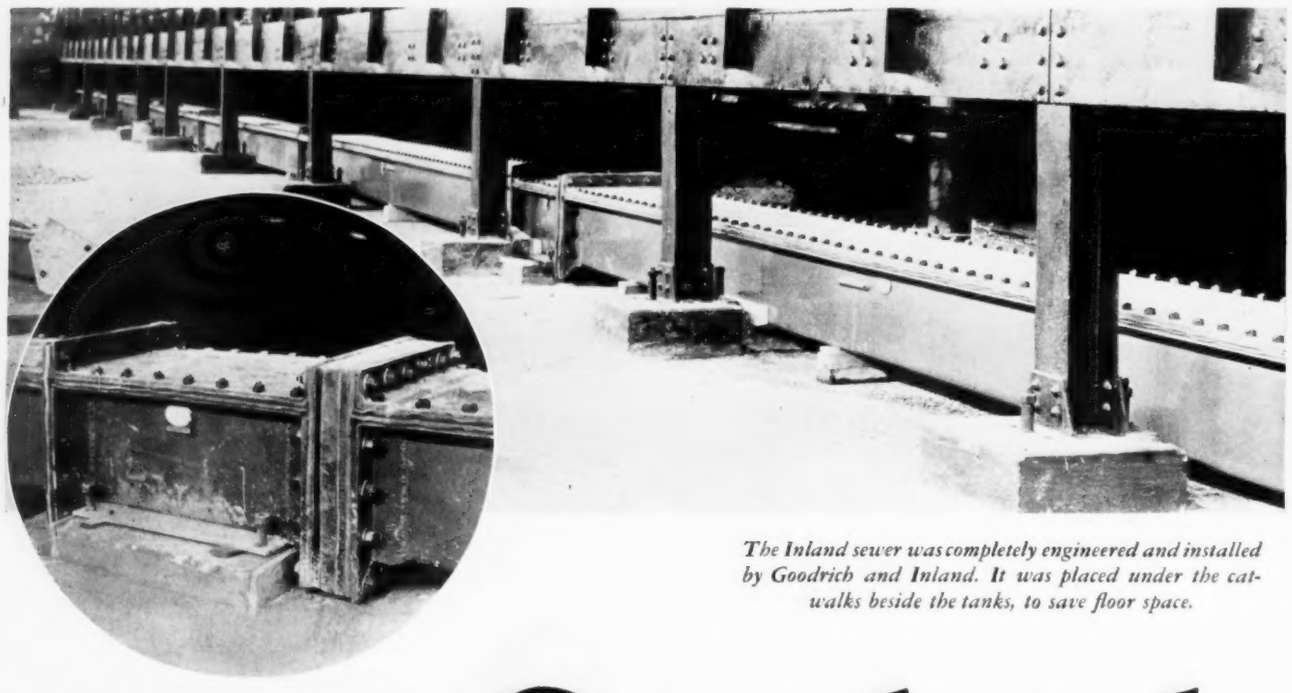
Here was an entirely new development in acid disposal, but Inland and Goodrich engineers worked together as a team in perfecting it. Then this newest application of rubber was installed . . . and immediately all acid leakage was stopped.

Now in the Inland plant the floor is dry, undermining is prevented, time and money formerly spent on sewer repairs are a thing of the past.

SUGGESTS OTHER USES TO AID IN ACID HANDLING

Steel companies and other industrial plants have turned to the Vulcalock process after all methods of rubber lining had failed. The secret of this patented Goodrich process is that it bonds rubber to metal with an adhesion of 700 to 1000 lbs. per sq. in., and it is not necessary to use special or treated rubber—the one best suited to the acid you use can be employed.

The Inland sewer has been so successful that it suggests the possibility of revolutionary new applications of the Vulcalock rubber process to even further serve and save in the handling of acids. Goodrich engineers will be glad to counsel with you on the storage, use and disposition of acid in your plant, and make available to you their unique experience in this branch of industry . . . The B. F. Goodrich Rubber Company, Mechanical Rubber Goods Division, Akron, Ohio. In Canada: Canadian Goodrich Co., Ltd., Kitchener, Ont.



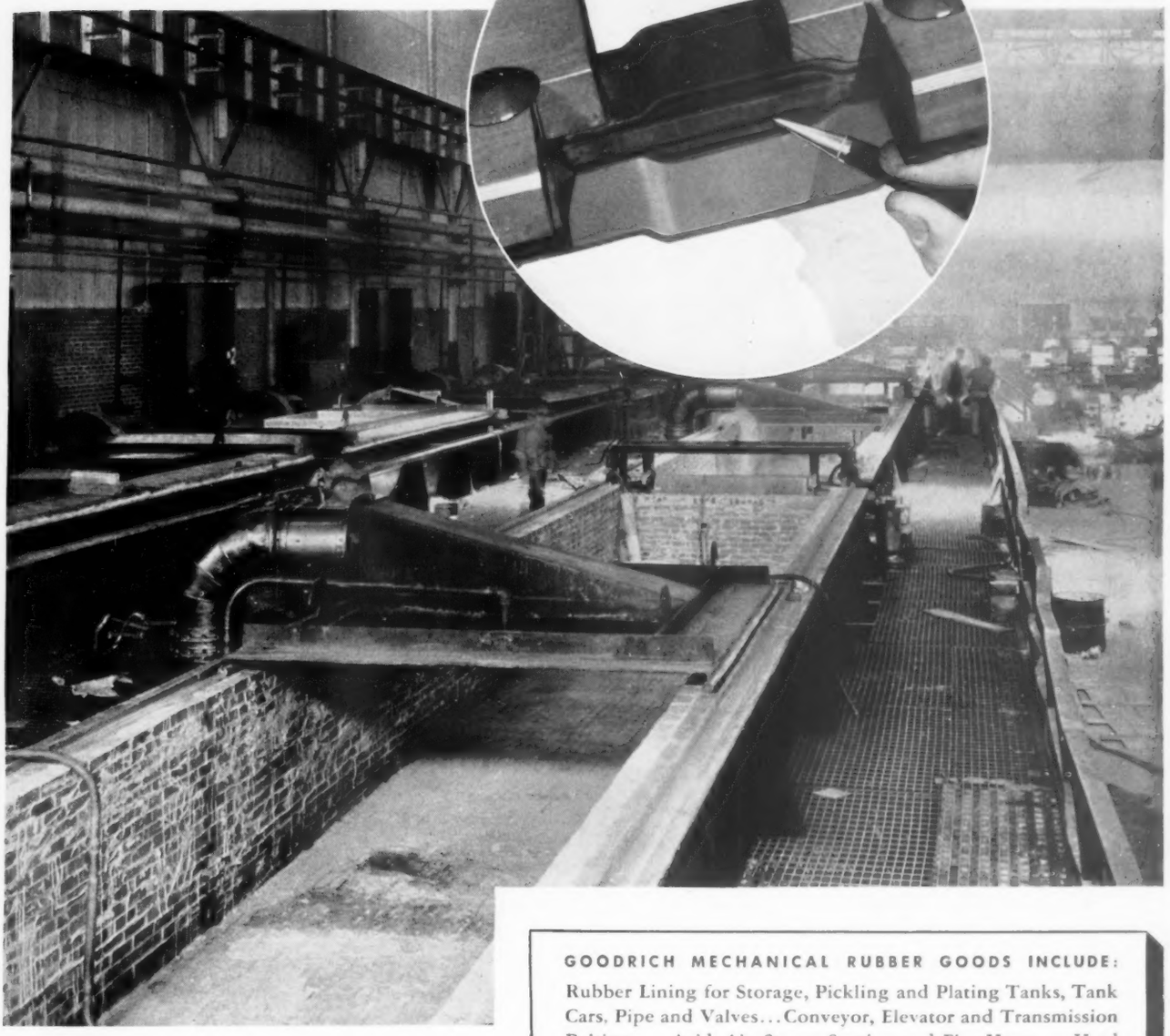
The Inland sewer was completely engineered and installed by Goodrich and Inland. It was placed under the catwalks beside the tanks, to save floor space.

Steel sewer, lined by the Goodrich Vulcalock process with Goodrich rubber. Note the rubber expansion joint, necessary because the sewer alternately handles cold water and waste acid at 195° F.

Goodrich

MADE SAFE BY VULCALOCK

Triflex Expansion Joint, designed by Goodrich. This together with the Vulcalock process of lining prevents cracking and acid leakage which is the cause of so much expense and failure when other linings are used.



Strip pickling unit at Inland Steel Co., 240 ft. long, 7 ft. wide, about 5 ft. deep. The rubber lining is protected by brick sheathing, in which Triflex rubber expansion joints are used.

GOODRICH MECHANICAL RUBBER GOODS INCLUDE:
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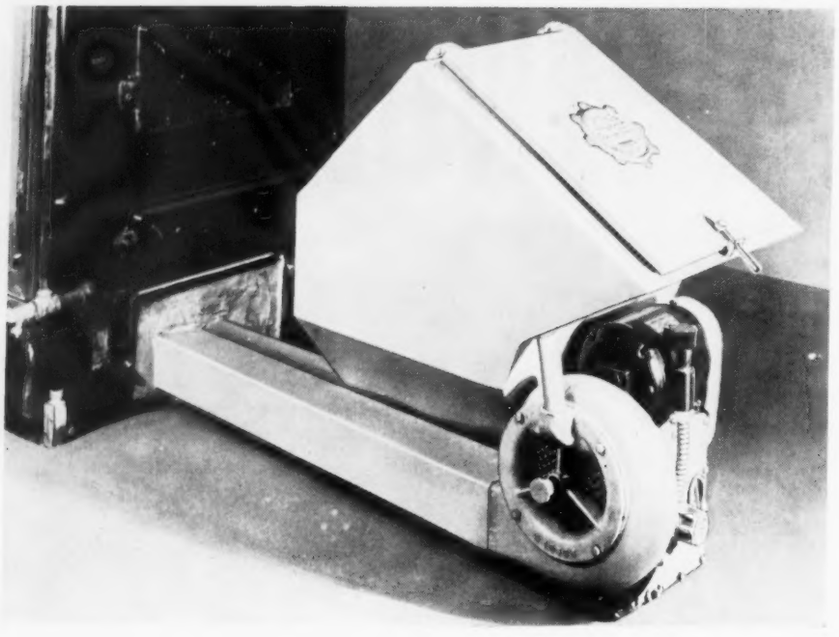

—Photo courtesy Link-Belt Co., Chicago

Domestic stoker, weighing about 500 pounds, and built principally of steel. Production of these units in 1933 totaled approximately 9500

LARGE USES OF STEEL IN SMALL WAYS

265th Article ◆ Domestic Stokers

DEMAND for modern conveniences in the home has been responsible for the development of numerous products which have meant growing markets for the iron and steel industry. Automatic heating equipment is one of the most important of these outlets, and sales of these robot firemen have increased steadily the past ten years.

Previous articles of this series—published Feb. 22, 1932, and Nov. 6, 1933—have described oil burners and gas heaters for domestic furnace use. The third of the principal types of automatic firing is the stoker which, while not completely automatic since the hopper must be filled and ashes removed occasionally, has a special appeal because of its marked economy of operation in addition to its elimination of the need for frequent coal shoveling.

Stokers have been used for some time by industry in large boiler installations for the efficient combustion of cheap grades of coal, but their application to the cellar furnace, while relatively new, is growing. Reports from about 75 per cent of the numerous manufacturers of domestic stokers show an output of around 9500 units in 1933, compared with 7000 in 1931. These figures indicate a yearly consumption in the industry of 2500 to 3000 tons of various steel products, in addition to a smaller tonnage of iron and steel castings.

Better Combustion Efficiency

The principle of design and operation of the industrial and domestic types of stokers is essentially the same, the latter being smaller naturally and having a thermostatic control which automatically regulates the rate of coal feed so as to maintain a predetermined temperature in the house, with only infrequent attention. Since the coal is fed into the firebox in a manner to produce efficient combustion, a cheaper grade of fuel can be used with this equipment than when hand firing is employed; smoke is eliminated and the amount of unburned coal in the ashes is minimized.

Illustrated is a typical domestic stoker, weighing 500 pounds and built principally of steel. The hopper will hold 500 pounds of coal which is fed into the furnace by means of a feed worm. A ½-horsepower electric motor, operating with a gear reducer, drives the worm as well as a blower which forces air into the combustion chamber. This stoker is the underfeed type, fresh coal being introduced under the fire bed, gradually being preheated and finally burned as additional fuel forces it up to the burning zone.

The hopper is fabricated from copper-bearing steel sheets, while the tube through which the coal is moved by the worm into the furnace is a steel pipe. The worm is a one-piece alloy steel casting, and gray iron is used for the furnace castings as well as for the reduction gear housing. Rolled steel is employed for the air duct and the fan and housing, although the housing may be cast iron. Gearing which operates the worm is steel and bronze.

Another type of domestic stoker, introduced recently, is designed for use with coke. It operates on the overfeed principle, the fuel being fed to the furnace by the movement of a plunger rather than a worm. This design is fabricated almost entirely of steel.

Oxide Film Increases Wear Resistance of Steel

The presence or absence of an oxide film on the surface of steel has an effect on the amount of wear in metal-to-metal contact, according to results recently secured in the metallurgical division of the national bureau of standards, Washington. If an oxide film is present the wear is greatly reduced.

The wear of metals is a subject of primary importance to engineers and has received a great deal of attention during recent years. H. S. Rawdon, chief of the metallurgical division, states that while some of the factors which affect wear are understood reasonably well, the effect of the surrounding atmosphere on the wear resistance has been a matter of dispute, investigators holding conflicting opinions.

In the bureau's work, a series of metal-to-metal wear tests was made on a plain carbon steel surrounded with atmospheres of hydrogen, nitrogen, and air. Little or no differences in the rates of wear were observed under these three conditions. It was found that under conditions which permitted the formation of a slight oxide film on the wearing surfaces the rate of wear was relatively low, whereas under conditions which did not permit such a film to form, the loss by wear was relatively very great. These results are at variance with those obtained previously by Fink in Germany, who tested steels under the same conditions and concluded that the presence of oxygen was essential to appreciable wear.

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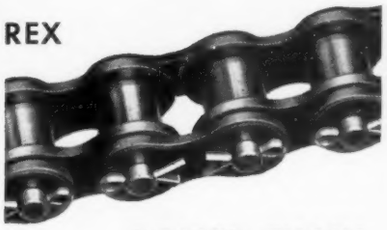

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The one-piece link—roller cast in place—makes it the most efficient malleable chain ever offered for eccentric loading on double strand conveyors.

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PROGRESS IN STEELMAKING

METAL which resists a temperature of 2000 degrees Fahr. and abrasion under this heat recently has been marketed. The new product is highly suitable for draft fans located in the stacks of open-hearth furnaces not equipped with waste-heat boilers.

♦ ♦ ♦

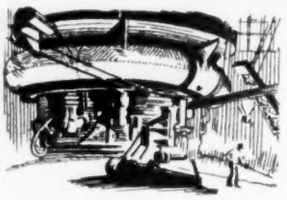
Notches and scratches on rods now can be eliminated before annealing by a new type surface rolling and burnishing machine which handles the work at the rate of 100 feet a minute. The unit also may be employed for surfacing rods intended for plating and for straightening small tubes and rods.

♦ ♦ ♦

Workmen are able to get into sheet mill pair furnaces after a shutdown within 14 hours when 9 inches of insulation faced with high-temperature cement is used compared with four days with conventional lined units.

♦ ♦ ♦

Utilization of iron scrap as a raw material for open-hearth steel is advocated in Germany. The material is charged into the furnace without either the addition of pig iron or steel scrap, but with excess carbon added in the form of small coke. The reactions after incipient melting are similar to those of pig iron and ore charges. The concentration of the various components is lower in the present process, although carbon still is present in the elementary state, even when the charge is melted, thus reducing the oxidizing action of the flame. After the carbon has disappeared from the surface of the molten charge the slag is found to contain a small portion of iron and the steel to be high in manganese. From this stage the process is identical with other open-hearth reactions. Deoxidation with ferromanganese is replaced by simple fusion which insures permanent absence of oxides prior to tapping the heat. The percentage of manganese in the bath increases toward the end of the heat and remains sufficiently high to permit tapping without adding ferromanganese. The process requires high fuel consumption and results in marked wear and tear of the furnace.



AUGERS for drilling out the iron notch at blast furnaces, when tipped with a wear-resisting material, stay in service about six times longer than untreated bits. At least 17 holes can be drilled with faced augers before sharpening is necessary.

♦ ♦ ♦

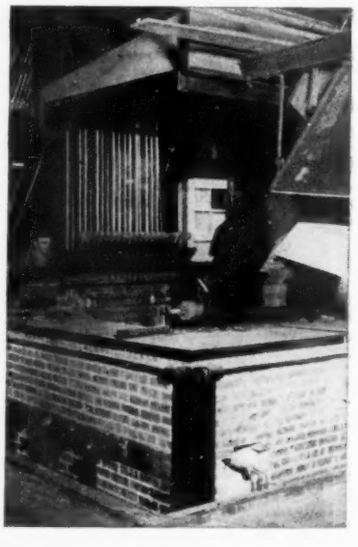
Preventing carbide precipitation in certain rustless steels is said to have been accomplished by adding copper and molybdenum. Steel containing 8 per cent nickel, 18 chromium, 1.25 copper and 1.25 molybdenum and low carbon can be used for long periods at temperatures ranging from 1000 to 1200 degrees Fahr. with no resulting brittleness and without any detriment to the physical properties of the steel.

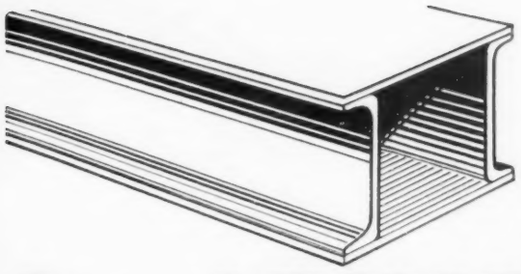
♦ ♦ ♦

Plastic insulating refractory has been developed for furnaces where the operating temperature does not exceed 2500 degrees Fahr. The matrial is used in place of firebrick, having the reputed faculty of being able to stand up under flame impingement. On account of its porous nature it is not recommended for use where in contact with molten metals, unless protected by a refractory coating. Insulating properties are claimed to reflect the heat, giving a flash heat to furnace walls quickly and conserving fuel and labor in preheating.

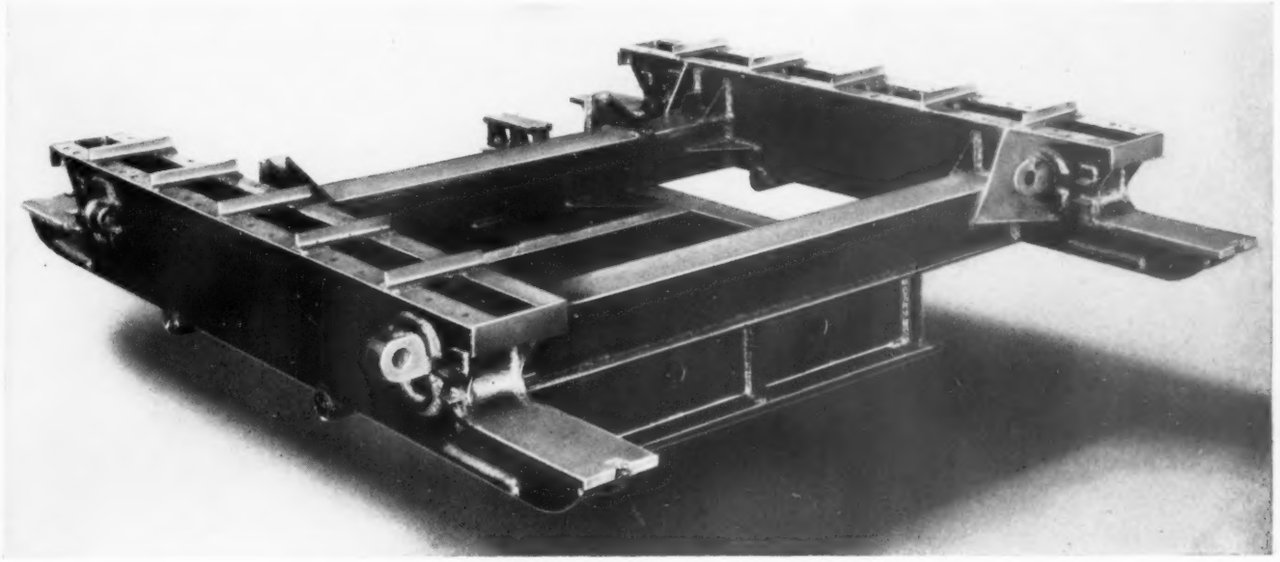
♦ ♦ ♦

Commercial value to large amounts of iron ore that cannot be used is expected to result from the operation of an ore-roasting furnace recently completed at Cooley, near Nashwauk, Minn. By the roasting process hemetite tailings will be changed into a magnetic ore, after which the iron concentrate will be removed from the silica by a magnetic separation process. The tailings have 30 per cent or more silica content, which must be reduced to about 10 per cent. The new plant will be used to determine whether costs can be reduced to a point where operation would be commercially practicable. The first furnace is a half unit, with a daily capacity of 250 tons, and if the process succeeds, this can be increased to any desired multiple.





The Box Section . . . One of ROLLED STEEL'S Answers to the Need for Reducing Weight . . .



MANY a product today is handicapped by excessive weight—weight which closes distant markets . . . adds to material costs . . . increases freight bills needlessly.

Rolled steel is providing the means of reducing weight in machine construction. A typical instance is in the use of box sections fabricated from rolled steel sections and plates. For fifty years the box section has demonstrated its engineering soundness in its application to structures—notably as chords in bridge trusses. The box section has excellent resistance to torsion, compression, bending, and tension stresses. Hence it provides rigidity and resistance to deflection without excessive weight. Illustrated here is a main frame for a small excavator.

The use of rolled steel reduced the weight by 5000 pounds without decreasing the rigidity or strength.

Machinery designers will find the Illinois Shape Book an invaluable source of physical data on rolled steel. Send today for a copy of this 280-page book.

Check these advantages of ROLLED STEEL *for machinery construction*

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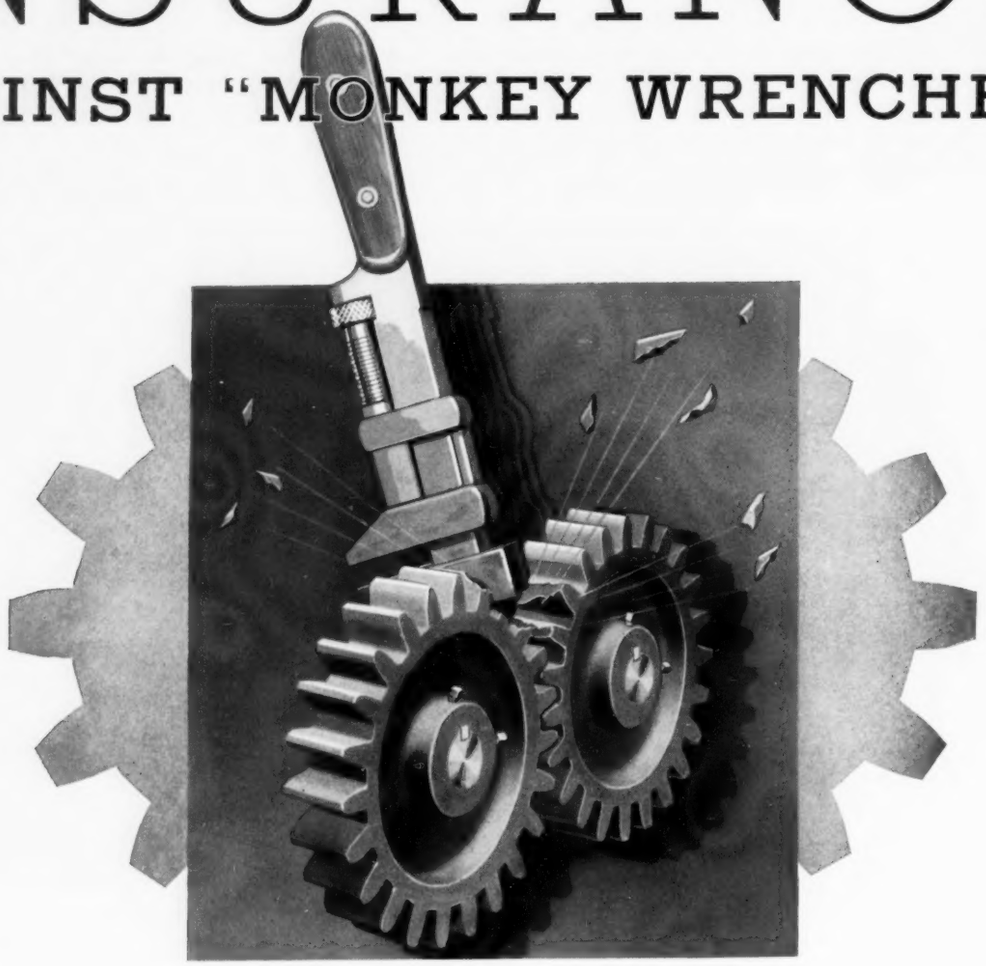
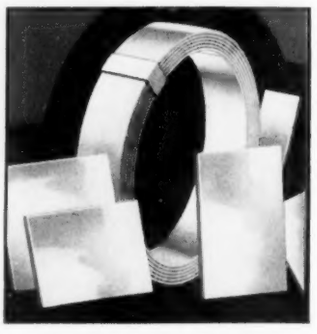
AGAINST "MONKEY WRENCHES"



GEARING your production schedule for one quality of Cold Rolled Strip Steel, and then having that quality vary from one shipment to the next, is "like throwing a monkey wrench into the machinery." How can you guard against this lack of uniformity that increases unit costs, multiplies rejections. The answer is: specify American Quality Cold Rolled Strip Steel. It is this quality that one-control supervision constantly safeguards, permitting no compromise with one high standard of uniformity. Back of this quality assurance is service "insurance" that protects against costly delays. Furnished in coils or cut lengths—in all widths, tempers, thicknesses, gauges and finishes to meet any need.



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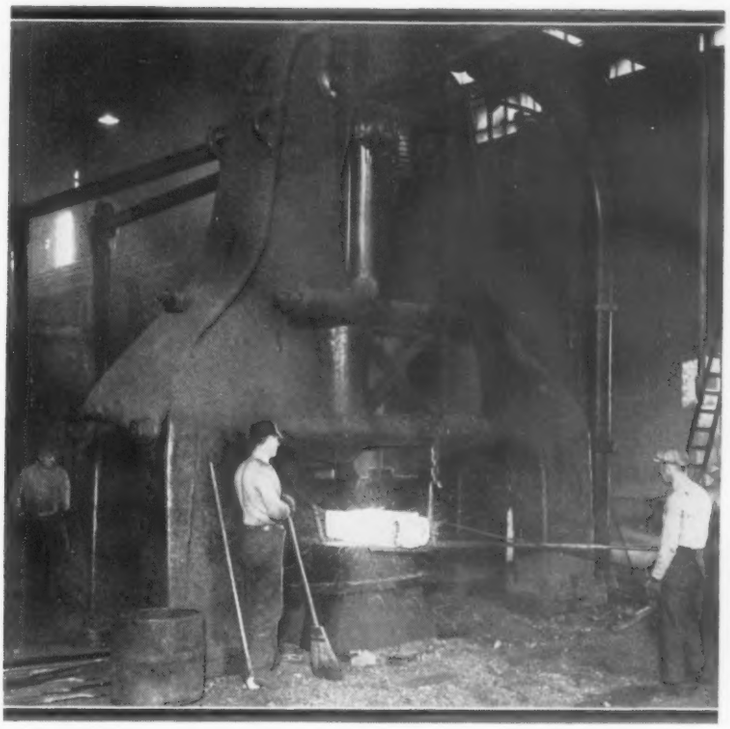


Hammer cogging an alloy steel billet under an 8-ton steam hammer, before the material is transferred to the hot rolling division

Forging and Rolling Wide Range of Alloy Steels

BY J. B. NEALEY

DEVELOPMENT an expansion in applications of corrosion and heat-resisting steels and irons from their original use in household cutlery to their present widespread use in a myriad of industrial uses is a story which needs no retelling. However, measures which suppliers of these materials take to insure a product of unvarying quality are of interest.

Latrobe Electric Steel Co., Latrobe, Pa., holds a leading position in the manufacture of special and alloy steels, in addition to stainless steels and irons producing a wide range of tool steel, high-speed steel, special magnet steel and the like. The company's plant is of modern design to permit close control of melting furnaces and other operations which follow, such as heat treating, forging rolling and the like.

Supplementing the metallurgical staff is a trained force of experts who supervise rolling, forging, annealing and heat treating of the steel, and they have the aid of complete metallurgical and chemical laboratories. For instance, melting control includes the use of the chemical laboratories and a telautograph system. Samples are taken from the molten bath frequently, analyzed and the results immediately telautographed to the furnace man so that any errors can be caught and corrected almost instantaneously. These laboratories, also used for research, require the services of 30 engineers.

At this plant are produced more than 150 separate alloy steels of different analyses. If the various series in which the analyses vary only slightly were added, the list would be extended to between 300 and 400. These products are furnished in bars, hot and cold rolled, and forgings. Capacity in finished bars is 6600 tons per year.

Details of Procedure

Four melting furnaces are provided, served by three overhead bridge cranes. Melts are tapped into ladles and poured into ingot molds with refractory hot tops. These refractory tops are preheated to 1900-2000 degrees Fahr.

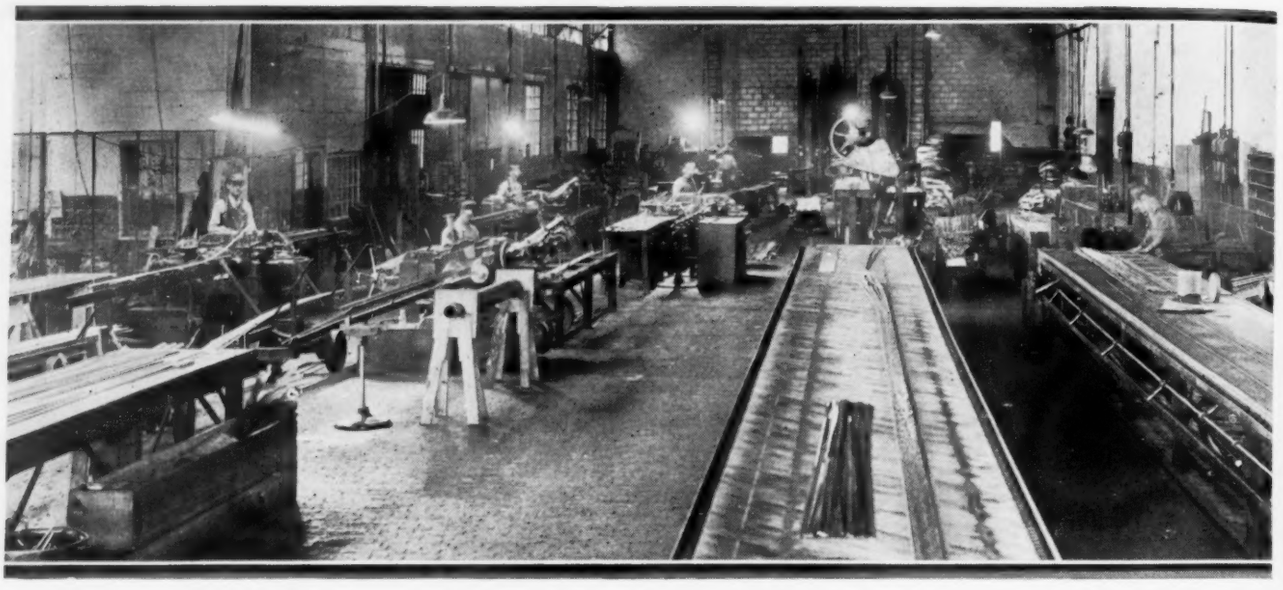
The hammer shop is in the same building and ingots are transferred by crane to the hammer furnaces. Steam hammers of the following sizes are included: 8-ton, 4-ton, 3-ton, 2500-pound, 1500-pound, and 800-pound. There are also several small tilt hammers. Each alloy made not only requires a different melting temperature to correspond with its analysis, but also special forging and rolling heats. These temperatures must be controlled carefully, a range of 200-250 degrees Fahr. being the outside limit. In addition to controlling the forging furnace temperatures with standard type pyrometers the hot material is watched, while being worked under the hammer, by operators with optical pyrometers.

Forged billets are transferred by a cross-over crane to the hot-rolling mill in an adjoining building which includes a 16-inch mill, two 12-inch mills, a 10-inch and 9-inch mill. Bridge cranes operate throughout the building.

Here billets are cut into short lengths after having been warmed with gas flames. They are then heated in large brick furnaces and put through the 16-inch rolling mill. Annealing is next and the long bars (15-foot average) are packed in pipes 12 to 14 inches in diameter with various mixtures to prevent oxidation and charged into one of 15 annealing furnaces. These furnaces are of brick and refractory construction, suitably stayed, and fired with gas fuel. A typical unit is 30 feet long, 15 feet wide and 6 feet high, and is provided with 16 gas burners, 8 to a side.

Gas is supplied at 110 pounds pressure, is reduced to 40 pounds at the manifold and again to 3 to 12 pounds, at the burner. Heat control is regulated with the help of a recording pyrometer with four thermocouples in the furnace.

While most of the production of



General view in the cold rolling and cold drawing division of the plant

this plant is shipped in the annealed state, a considerable portion is hardened according to customers' specifications.

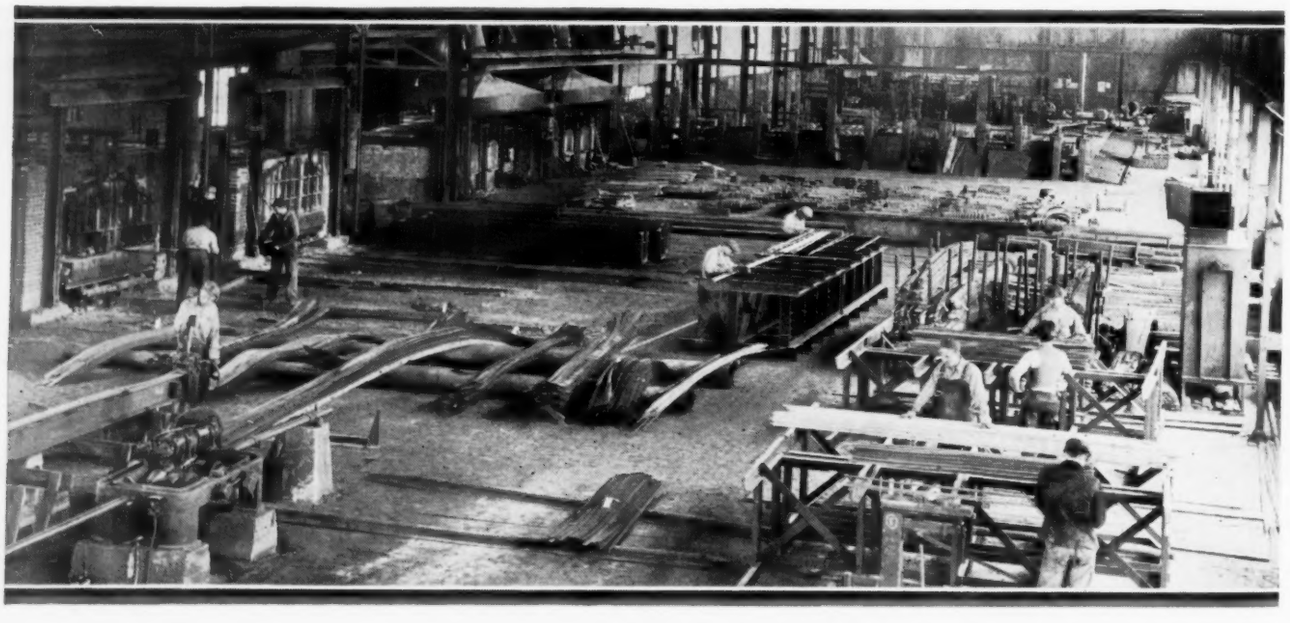
Some of the product from the 12-inch mill is hardened in one of two car-bottom type furnaces about the size of the annealing units just described. The cars operate in and out on tracks and are loaded and unloaded by crane. At the end of the heat cycle the crane transfers the hot bars to an oil or water quench. A portion of the material is air quenched. Some of the heating furnaces in this division use coal or oil, but they are being converted to gas firing.

Smaller sizes of tool and stainless steels are hot rolled in the 10-inch mill, the resulting product being in strip form. Some of it is beveled to be made up into knives. Stock is heated for rolling in one of ten gas-fired furnaces. The most recent furnace built is 12 feet wide, 6 feet deep and 4 feet high, and has three doors in the front. It is equipped with a diffusion flame burner which creates a smoky non-scaling atmosphere in the furnace. This is a luminous flame extending the entire length of the furnace. It consists of multiple and parallel jets of gas and air which burn as they diffuse or mingle. Free carbon particles cause the luminosity and jets of gas, near the hearth to envelop the work, forming a protective blanket about it.

The 9-inch rolling mill is served with three gas fired annealing furnaces of the car-bottom type and similar to those described.

The cold drawing division contains a full complement of rolls and drawing benches for sizing small bars. Here are located batteries of centerless grinders for sizing, finishing and polishing drill rod and round bars of various kinds. There are also mills for finishing strip steel. Some of the product is annealed in one of two gas-fired car-bottom furnaces. The latter are 30 feet long and range from 12 to 18 feet in width and 6 to 8 feet in height.

While some of the work is piled on the car and heated directly, the remainder is packed in pots with various mixtures to prevent scaling. The material that is heated directly



General view in the 10-inch mill building. Note gas-fired car-type furnaces and quench tanks at left

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"SHIELD-ARC" CUTS WELDING COSTS

Photo courtesy of Joy Manufacturing Company Franklin, Pa.

Cost of welding goes down when a *"Shield-Arc"* welder goes on the job. Its high efficiency gives more welding per kilowatt-hour. *"Shield-Arc"* consumes less power regardless of load. Costs less to operate.

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Eight other features help the *"Shield-Arc"* to produce high quality welds at lowest cost. In no other welder will you find *all* these features. That's why more Lincoln welders are in use today than any other make.

With *"Shield-Arc's"* uniform current you can use a higher average current with less splattering and waste of molten electrode metal. Thus more weld metal is deposited per unit of time . . . more weld per dollar. Start saving those dollars now. Ask for a free study of your welding costs.

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"SHIELD-ARC" has them all

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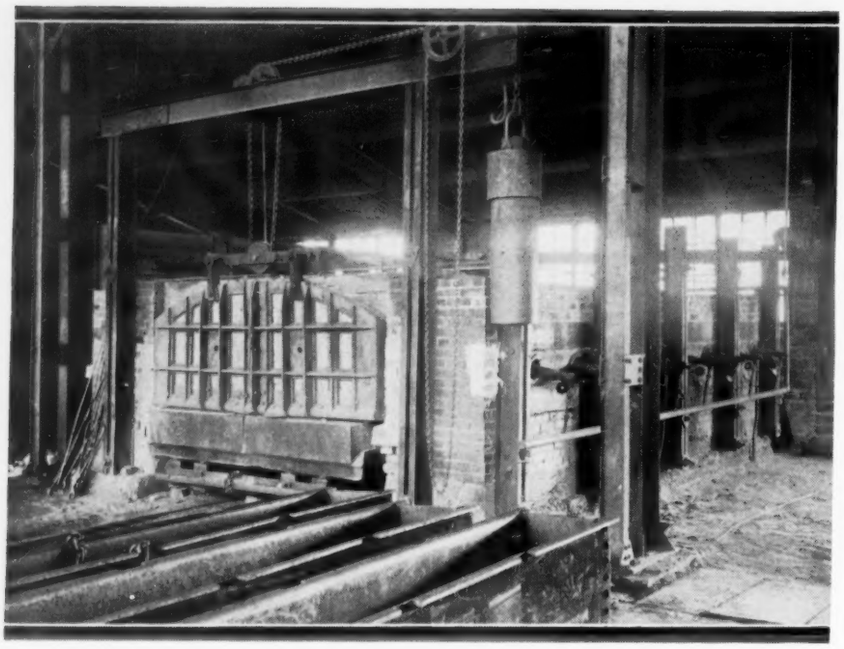

One of battery of gas-fired car-bottom furnaces, with quench tanks in the foreground

is pickled and then dried in a special gas furnace 25 feet long, 12 feet wide and 7 feet high, heated with a single gas burner located in one side near the charging end and close to the floor. A temperature of 400-500 degrees Fahr. is maintained.

A separate heat treating division is maintained for finished stock that has been cut into smaller sizes, gas fuel being used throughout. Along one side wall is a row of seven brick, box-type furnaces of various sizes and designed for temperatures ranging from 800 to 2500 degrees Fahr.

Three lead pots set in a brick furnace of a roughly triangular shape, and each is heated by a separate gas burner. Oil tempering baths each utilize a single gas burner. Quench tanks are set with tops at floor level. The work is handled with swing boom cranes and hoists.

Standards Group Enjoying Growth

DESPITE the depression, the American Standards association, 29 West Thirty-ninth street, New York, has reached an all-time peak in membership with 42 member-bodies and associate members and 1233 company members, it has been announced by Dr. P. G. Agnew, secretary. Since January, nine associations have become member bodies or associate members.

The association is the national clearing house for standards and safety codes. It was formed in 1918 by five technical societies which felt the need of developing inter-industry standards out of their own technical standards. More than 250 codes have been developed and nearly 200 are under development or are being revised. More than 3000 engineers, scientists and industrialists, representing manufacturers, technical societies, consumers and government departments serve on committees.

Since the first of the year, the National Electrical Manufacturers association and the Casualty group of the American Mutual Alliance have increased their memberships to make available the facilities and services of the association to all their members. A total of 673 companies are represented by these groups.

Eleven others have joined the association and four have voluntarily increased their dues. Among the new member bodies are the American Petroleum institute and the American Institute of Bolt, Nut and Rivet Manufacturers. Associate member affiliations include the Illuminating Engineering society, American Water Works association and Grinding Wheel Manufacturers Association of the United States.

Among new member companies are E. I. duPont de Nemours & Co., Foxboro Co., Gilbert & Barker Mfg. Co., Wright Aeronautical Corp., Fellows Gear Shaper Co., O.K. Tool Co. and the Carrier Corp.

Since the early days of standardization, bolt, nut and rivet manufacturers and users have been interested in standard threads, sizes and simplification of these products. Technical and industrial executives of this industry have been active in American standards work in this field since its inception. The Illuminating Engineering society has been supporting the association for some years and is represented on eight standards projects.

The Grinding Wheel Manufacturers association is one of two associations which furnished the administrative leadership for the development of American standard safety code for use, care and protection of abrasive wheels, used throughout the country.

STRUCTURAL STEELWORK ON NEW MILL BUILDING NEAR COMPLETION: Recent view showing progress of construction on first building of new cold strip mill being erected in Detroit by the Rotary Electric Steel Co. (Michigan). Approximately 60 x 700 feet in size, this building will contain some of the equipment for cold rolling strip up to 10 inches wide, and round and hexagon sizes of cold-drawn stock from ¼-inch to ¾-inch

MESTA HARDENED
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MESTA HARDENED CHILL ROLLS
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2 High Continuous Sheet Bar Mills

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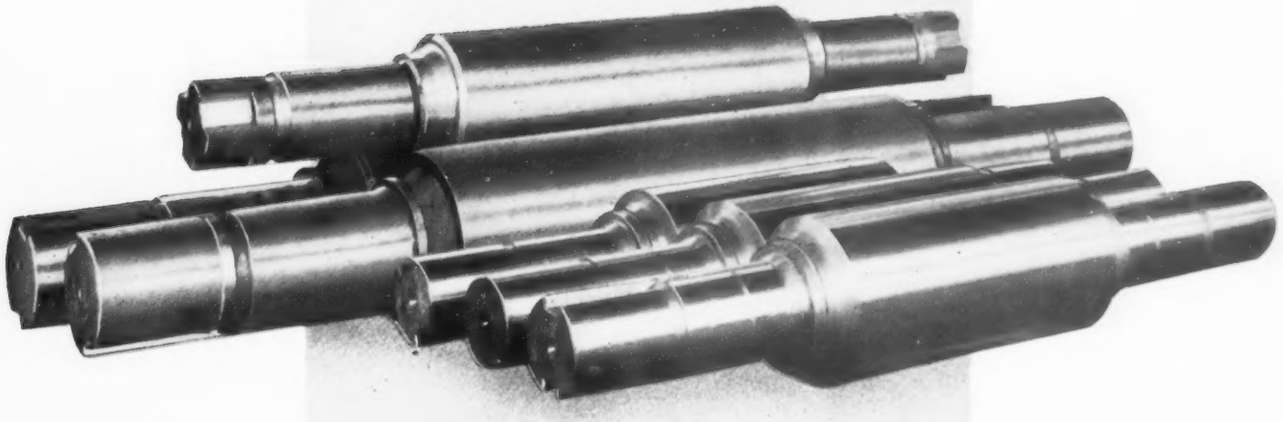
4 High Cold Strip Mill, Working Rolls

3 High Finishing Mill Rolls

Plate Mill Rolls

Various grades to suit mill operating conditions and surface requirements of finished product.



MESTA MACHINE COMPANY
PITTSBURGH, PA.

STEEL SHOW ISSUE » » SEPTEMBER 24, 1934

INFORMATION

GENERAL

The National Metal Congress and Exposition (American Society for Metals) will be held at the Commerce Building, New York City, October 1-5. The following technical societies, will participate:

American Society for Metals

American Welding Society

Iron & Steel Division, A.I.M.&M.E.

Institute of Metals Division, A.I.M. & M. E.

Wire Association

Naturally, STEEL will play a prominent part in co-operating to make this Sixteenth Annual National Metal Congress a success. The issue of September 24 will carry the complete advance details of the exposition and convention, and will be in the hands of readers a week before the convention opens—ample time to make plans.

This issue will bring the convention and exposition to those who cannot attend.

PUBLICATION

A feature of the September 24 issue of STEEL will be a combined editorial and advertising section devoted to the same interests as the National Metal Congress.

Those advertisers desirous of appealing to these same interests will find unusual value in being properly represented in the special section of this issue.

This interest value is not confined to the readers of STEEL who attend the Exposition, but extends in even larger measure to those similarly interested who do not attend, thereby depending more largely upon STEEL to bring the Exposition to them.

COLOR

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CLOSING DATES

Final forms close Wednesday, September 12. Reservation and copy requiring composition should be in Cleveland not later than Thursday, September 6.

STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

For forty-eight years—IRON TRADE REVIEW

CLEVELAND

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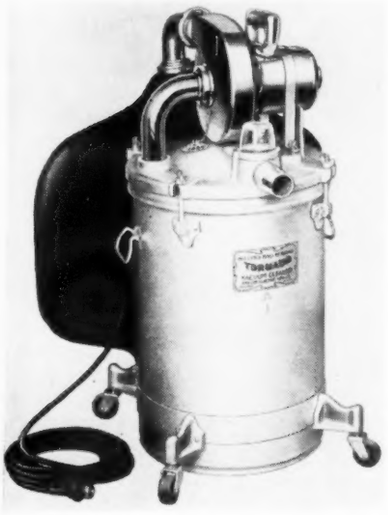
NEW EQUIPMENT

PRODUCTION FABRICATION
TREATMENT FINISHING

Industrial Vacuum Cleaner— Breuer Electric Mfg. Co., 852 Blackhawk street, Chicago, recently brought out a model 112 industrial vacuum cleaner, shown herewith. This heavy-duty unit has a 46¼-inch water lift, weighs only 45 pounds, has a 12-gallon steel tank



Industrial vacuum cleaner built by Breuer Electric Mfg. Co.

and is equipped with a complete set of standard attachments for all plant cleaning purposes.

A special feature of this new machine is the observation glass which allows operator to see dirt being removed when cleaning. Motor unit can be removed for use as a handy blower, aside from standard attachments for cleaning machinery, motors, overhead pipes, walls, floors, rugs and other industrial applications. Special tools are also available for cleaning furnaces, boilers, ovens, flues, boiler tubes, etc.

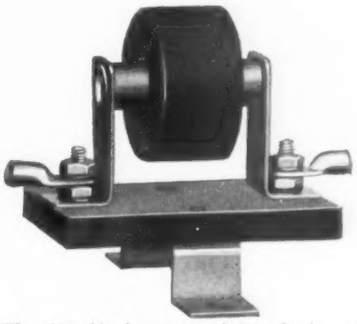
◆ ◆ ◆

Cabinet Transformer — Jefferson Electric Co., Bellwood, Ill., recently supplemented its line with indoor transformers enclosed in a new narrow style single piece deep drawn case. Rust-resisting steel is used, art-enameled to insure a permanently attractive appearance. These transformers include such features as the patented Jefferson mid-point grounded balanced design, mica insulation, double-vacuum treatment of the complete core and coil unit—low heat rise—high silicon steel non-aging core and processed porcelain bushings. Hooks are provided for hanging. A pull switch is standard equipment. If cord and plug are desired on primary, attachment can be made through the wiring box.

◆ ◆ ◆

Discharge Resistors — General Electric Co., Schenectady, N. Y., recently introduced a new type of Thyrite discharge resistor to protect the insulation of direct-current magnetic circuits against excessive discharge voltages when the circuits are opened. Because Thyrite, which conducts about 16 times more current each time the voltage is doubled, is practically an insulator at line voltages, it reduces the continuous watt loss for the new units to approximately 2 per cent of that for equivalent permanently-connected fixed resistors.

Designated as type CR9196 discharge resistors, the new units, shown herewith, are available in two ratings—one for 110 to 275 volts; the other for 500 to 650 volts. Mounting dimensions and space requirements of both



Thyrite discharge resistor designed by General Electric Co.

ratings are the same. They can be conveniently applied to protect direct-current motor fields, lifting magnets, shunt fields of alternating-current and direct-current generators, etc.

◆ ◆ ◆

Roller-Leveling Machine — United Engineering & Foundry Co., Pittsburgh, has developed a roller leveling machine for flattening light gage steel sheets. The unit, shown herewith, is of the close center staggered roller type with all 17 rolls driven through sleeve-type universal couplings from a fully enclosed roller bearing mounted drive. A circulating oil system provides a continuous flow of oil to gears and bearings.

Backing rolls of the same diameter as the work rolls, but of about half their length, are mounted in two frames which are adjustable vertically by wedges to maintain proper contact with the straightening rolls at all times. Complete top roll assembly is adjustable to four screws operated by worm gearing and handwheels. Vertical opening between rolls is shown by four graduate drum-type indicators, each of which is mounted on top of an adjusting screw. All bearings are roller type, and those for the rolls are provided with connections for pressure grease lubrication.

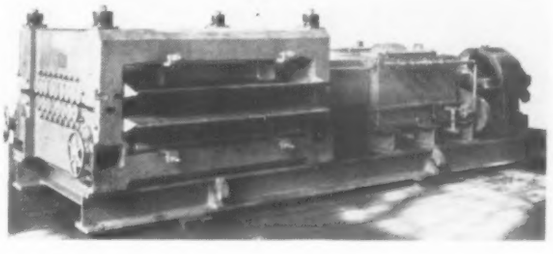
Drive case and base are built entirely of plates and beams, while the straightening roll assembly is a combination of cast and steel frames to which are welded bearing supports formed of rolled slabs. Backing roll frames are constructed entirely of slabs welded together. These machines can be adjusted quickly to suit different gages of sheets, and the arrangement is such that the rolls can be removed readily for redressing and quickly replaced and adjusted.

◆ ◆ ◆

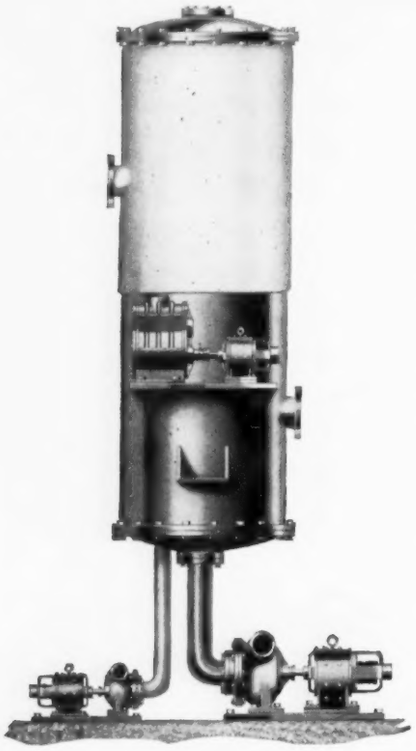
Steam-Operated Cooler — Elliott Co., Pittsburgh, recently brought out a steam-operated cooler which produces cooled water by means of flash or evaporation under vacuum. For manufacturing plants the unit provides an economical means of supplying cooled water for drinking purposes, cooled water for use in air coolers or air conditioning cabinets, and other applications where it is desirable to use water cooled to between 40 and 50 degrees Fahr.

This steam cooler is fully contained within a single tank and is compact in size, being two feet in diameter and approximately 6 feet in height. Within the tank is a low pressure

ROLLER leveling machine developed by United Engineering & Foundry Co. Drive case and base are built entirely of plates and beams



evaporating compartment, a compressor of the steam jet type and a condenser. The exterior of the tank has one pump for removing and circulating the cooled water and another pump which functions to remove the condensing water from the condensing



Steam-operated cooler recently introduced by Elliott Co.

compartment. An auxiliary motor driven vacuum pump is mounted on the side of the unit for the purpose of maintaining a moderately reduced pressure in the condensing compartment. Steam operated coolers of the unit type, as illustrated, are built in three different sizes up to 15 tons. Large commercial units for any capacity also are available.

♦ ♦ ♦

Fan-Cooled Direct-Current Motors—General Electric Co., Schenectady, N. Y., is bringing out a new line of direct-current motors, shown herewith, designed for applications where dust, dirt, moisture, or other foreign matter is present in large quantities. The new units are totally enclosed and fan-cooled, and are available in a wide variety of electrical and mechanical modifications—in sizes from ½ to 200 horsepower.

A system of dual ventilation is utilized. This together with watertight conduit boxes, and labyrinth seals at the cartridge-type bearing

General Electric totally enclosed direct-current motor

housings effectively protects the working parts of the motor. An internal fan draws the warm air from the windings and core and circulates it around the interior of the motor so that it gives up its heat to the frame and end shields. An external fan draws cool air in through mesh openings in an outer end shield and directs it over the surface of the magnet frame and inner end shields. These new direct-current motors are especially suited for application in locations where obnoxious process-dusts prevail, and to such apparatus as stokers, conveyors, pumps, machine tools, sand screens and shakers.

♦ ♦ ♦

Power Elevator Tailgate—Davey Compressor Co. Inc., Kent, O., recently developed a power elevator tailgate designed for commercial vehicles. The new equipment is employed to handle loads in or out of a truck or van without manual labor. One of these tailgates in lowered position is shown in the accompanying illustration.

The tailgate and its mechanism are in effect a power elevator operated by a take-off from the truck motor. The device is mounted in a welded frame of structural steel and comprises the rear end of the truck or van body. It can be built into the frame when a new body is being constructed, or can be quickly installed in an old chassis by any commercial body builder. It

Davey-Trocll power elevator tailgate for commercial vehicles

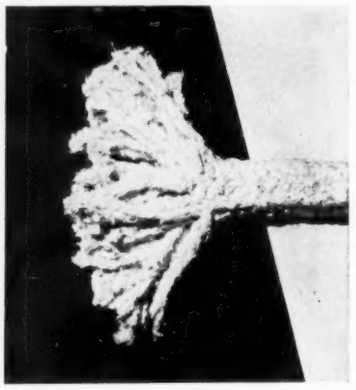
can be designed to fit any type of body of any make of truck.

This power elevator tailgate is driven by a worm gear which in turn is actuated by the truck motor drive shaft. The worm gear has a ratio of about 40 to 1 and the unit requires from 1 to 2 horsepower for the handling of full loads on the elevator tailgate.

Two drums near the center of the truck chassis, controlled by a shaft from the worm gear, operate cables leading to rams in vertical sliding grooves. These rams raise and lower the tailgate; and their performance is such that the entire cycle of raising and lowering is under the operator's complete control at every instant.

♦ ♦ ♦

Asbestos Packing — Johns-Manville, 22 East Fortieth street, New York, has placed on the market asbestos packing for reciprocating and centrifugal rods. As shown in the accompanying illustration, each individual strand of long asbestos fiber yarn is so interlocked in the



Johns-Manville packing for reciprocating, centrifugal rods

braiding as to provide a packing with a completely integral braided structure. Because it is braided square, it is claimed to assure a better packing face on the rod, with more contacting area. The integral structure also results in greater resiliency and flexibility. The new product is recommended for packing against saturated or superheated steam; hot or cold, fresh or salt water; and weak caustics and acids.

♦ ♦ ♦

Needle Valve for Blowpipe—Linde Air Products Co., 30 East Forty-second street, New York, has developed a new type of needle valve which it is supplying on most Oxweld blowpipes. The mechanism embodies a seat between the blowpipe body and the needle valve which is made of a hardened and

highly polished stainless steel ball, held in a cage at the end of the valve stem. This type valve closes readily with but the slightest effort of two fingers and opens with equal readiness, it is claimed. The polished ball frees itself readily of all foreign particles that might impair the gas-tight seat.

♦ ♦ ♦

Adjustable Valve — Carrick Engineering Co., P. O. Box 299, Michigan City, Ind., recently introduced an adjustable valve, shown herewith, of the moving plug type. The valve body and all external parts, except the lever, are of cast hard bronze for ordinary steam pressures and temperatures. For high steam pressures and temperatures the body and head flange coming in contact with the steam are of cast steel. Other external parts are of gray cast iron. The operating lever is of monel metal and the stem of stainless steel.

Although screwed connections are standard flange connections can be furnished. Steam passing through the valve does not come in contact with the valve seats, eliminating the effects of wire drawing. Although the valve is designed primarily for the control of steam it is entirely suitable for the control of other fluids, such as oil, gas or air.

This adjustable valve generally is controlled by some automatic device such as the Carrick master control. In such a case the valve is part of a

Adjustable Flo-Trol valve designed by Carrick Engineering Co. Although developed primarily for control of steam, it is suitable for the control of other fluids such as oil, gas or air

combustion control system. The lever of the valve is moved automatically to secure a variation of steam flow for speed control of the engine or turbine driving the stoker or fan. The manually adjustable feature of the valve makes it possible to secure the required range of speed to be effected by the movement of the valve lever.

♦ ♦ ♦

Acetylene Generator—Linde Air Products Co., 30 East Forty-second street, New York, has placed on the

Oxweld type MP-5 automatic stationary acetylene generator

market an automatic stationary generator rated to deliver 1000 cubic feet of acetylene per hour. Relief valve arrangement of this type MP-5 generator, shown herewith, is particularly interesting. A separate relief valve with a separate outdoor vent line is provided for the back pressure valve, and two other relief valves with a common outdoor vent line are provided for the generator chamber. This idea was adopted because of the high capacity of the generator, and also because it is easier to get good seating and prevent leakage when two valves are used instead of one large one. The generator is provided with a hopper that has eyelets around the top so that it can be removed with a block and tackle. To insure a gas tight seal and to lessen slaking when the generator is out of service for long periods, a soft rubber seat is provided on the hopper outlet.

In general construction, this new generator has been made simple but rugged. Non-corroding materials are used throughout, and galvanized steel castings or stainless steel parts are used where exceptional strength is required. Most of the seams are bronze-welded; and some of the longer exposed joints on the water shell are double-vee welded, showing that no effort has been overlooked to make this of the finest and most permanent construction.

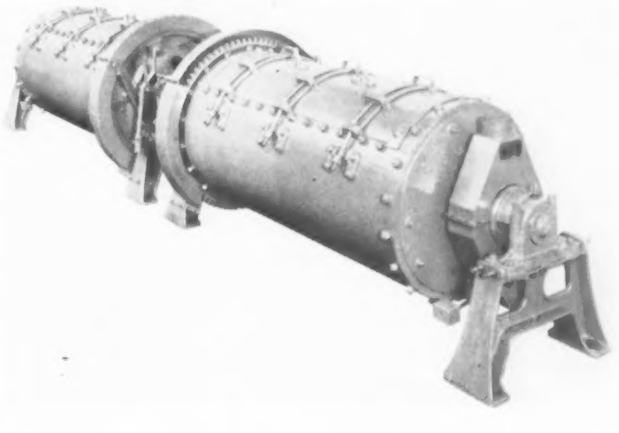
♦ ♦ ♦

Tumbling Mills—W. W. Sly Mfg. Co., 4700 Train avenue, Cleveland, is bringing out a new line of tumbling mills, one of which is shown in the accompanying illustration. Design of these units reveals a marked departure in many details. Particular features include roller bearings throughout, improved barrel construction providing longer life and preventing warpage under severe duty, modern drives represented by worm gear speed reducers, etc.

Another outstanding feature with which these mills can be supplied is a combination clutch and brake. The clutch starts and stops the mill; the brake is applied by the clutch lever to stop and hold the mill in any desired position for convenient loading and unloading. The door lock also is a new feature, its operation being quick and simple, with no parts actually removed from the unit.

This new line of tumbling mills includes various arrangements such as single mills for belt or direct motor drive, mills arranged in single file or double file batteries, as well as mills installed on elevated platforms or below the floor.

MARKED departure in design features the new Sly tumbling mills. Improved barrel construction provides longer life and prevents warpage under severe duty. A new type door lock, modern drives, etc., provide added utility



New Trade Publications

SPEED TRANSMISSION — Reeves Pulley Co., Columbus, Ind., has issued a booklet calling attention to the features of its variable speed transmission.

TOOLS—Tools of beryllium copper, non-sparking, for use in conditions where explosion hazards exist are described in a bulletin by Stanley Tools, New Britain, Conn.

FANS—Streamlining applied to cooling fans is presented as a feature of the products of Propellair Inc., Springfield, O., in a current folder. Illustrations explain the principle involved.

ENAMEL — Ferro Enamel Corp., Cleveland, will distribute shortly a descriptive catalog of its products, covering porcelain enamels, furnaces and supplies, for applying enamels to fabricated metal.

DRILL UNIT—A square ram hydraulic drill unit is described in a bulletin by the W. F. & John Barnes Co., Rockford, Ill., now being distributed. In addition to illustrations and description of the unit a data sheet is included.

WELDING LENS—A leaflet by the Lincoln Electric Co., Cleveland, describes its lens for the use of welders, to cut off the ultraviolet and infrared rays and allow passage of only the visible rays of light.

REFRACTORY — Johns-Manville, 22 East Fortieth street, New York, in a current technical folder presents the claims of its sil-o-cel refractory brick for furnace linings to save heat losses. A table of performance results is given.

PUMPS—Single stage monobloc centrifugal pumps are featured in a bulletin by Worthington Pump & Machinery Corp., Harrison, N. J. Details and specifications are given and typical installations are illustrated.

CRANES—American Hoist & Derrick Co., St. Paul, has issued two booklets, one describing in general the crane and derrick equipment manufactured by the company and the other devoted to its line of cranes. Each is well illustrated.

VALVES — Discussion of desirable characteristics of boiler non-return valves is presented in a 48-page booklet by the Edward Valve & Mfg. Co., East Chicago, Ind., bulletin 11-T. Various installations are illustrated.

PYROMETERS—Bulletin No. 1727 by the Illinois Testing Laboratories Inc., 141 West Austin avenue, Chicago, describes and illustrates its pyrometers for taking surface temperatures of rolls, molds, platens, plastics and for general research work.

FURNACES—Electric furnaces in small sizes for laboratory use are described in a current catalog, No. 34, issued by the Cooley Electric Furnace Co., Indianapolis. Description and specifications are given of muffle, combustion tube and crucible furnaces and hot plates.

MONORAIL — American MonoRail Co., Cleveland, has issued a bulletin to illustrate the wide range of application of its equipment. The contents are largely illustrations of typical installations, with detailed drawings to show construction.

POWER BELTS—"Short Cuts to Power Transmission," is the title of a booklet published by the Flexible Steel Lacing Co., 4607 Lexington street, Chicago. It presents information on ordinary belt transmission problems, discussion of various types of belting, belt joints and good transmission practice. It is well illustrated.

BLOWERS—Single-stage centrifugal blowers and exhausters are described in bulletin 120-B10 by the Roots-Connersville Blower Corp., Connersville, Ind. A table lists capacities up to 8000 cubic feet per minute at pressures up to three pounds. Various types are included in the descriptions.

VALVES—Micro regulating valves for regulating oil flow to burners for industrial heating processes and for controlling flow of fluids form the subject of bulletin No. 702 by the Hauck Mfg. Co., 126 Tenth street, Brooklyn, N. Y. It is illustrated to show the wide application of such valves.

CROMANSIL STEEL—Lukens Steel Co., Coatesville, Pa., in a current bulletin features its steel containing chromium, manganese and silicon for applications where the resulting properties are of value. The bulletin goes into the subject of this special steel and its various uses.

EXPANSION JOINT—American District Steam Co., North Tonawanda, N. Y., in bulletin No. 211 describes its piston-ring expansion joint for continuous service. A feature is that it can be packed under full operating pressure. Illustrations of construction details and tables of specifications are included.

SHAFT COUPLINGS—Couplings with no metal bearing surfaces and no lubrication required are featured in a leaflet by the Smith Power Transmission Co., 1213 West Third street, Cleveland. Various other features of the coupling are presented and a table of specifications is included.

VALVES—A 12-inch cutout replica of a standard iron body gate valve is being distributed by Jenkins Bros., 80 White street, New York. Exterior and interior of the valve are shown in detail, with score card for comparison with other valves.

MOTOR CONTROL PANELS—Automatic action, safety and appearance are considerations behind design of a dead-front, unit-type motor control panel designed by the Electric Controller & Mfg. Co., Cleveland, described in a recent bulletin. In this is illustrated a nine-panel installation with much detailed description.

SUPER REFRACTORY CEMENT—Claimed not to soften or crumble at the highest temperature attained in any fuel-fired furnace, its softening point being above 3400 degrees Fahr., a neutral-base super-refractory cement is described in a current bulletin, No. 306, by the Quigley Co. Inc., 56 West Forty-fifth street, New York. Illustrations show its applications.

SCREENS—Robins Conveying Belt Co., 15 Park Row, New York, in three bulletins presents various types of screens for separating materials. No. 89 is devoted to screen cloth of various types. No. 90 covers the company's gyrex screens, with ample illustrations and descriptive matter; No. 91 describes and illustrates a sand flotation process for cleaning bituminous coal, with data on cost of operation.

MOTORS—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has published a bulletin on its line of explosion-resisting motors in ratings up to 200 horsepower. A special ventilating system is used in the larger sized motors to keep the frame size comparable to that of the standard open motor of the same rating. Illustrations show construction of the unit.

WELDING RODS—Anaconda welding rods for gas and electric welding form the subject of a booklet by the American Brass Co., Waterbury, Conn. It gives detailed information on welding properties, melting points, weight and strength data, method of procedure and individual characteristics of each of 14 welding rods. Various methods of welding are also described and illustrated.

INSULATED CABLE General Electric Co., Schenectady, N. Y., has issued an illustrated reference book on how to select insulated cable, numbered GEA-1837. It covers cable for transmission and distribution of electric power at normal frequencies and presents in convenient form the information needed for determining the cable best adapted for a particular installation.

DIESEL ELECTRIC LOCOMOTIVES —Diesel engines and fifteen standard sizes of diesel electric locomotives are described and illustrated in an 80-page booklet by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Specifications, outline drawings, performance curves and comparative operating data are included, as well as an exhibit of locomotives in service.

BOILER METERS—Engineers and executives responsible for economical generation of steam in municipal, institutional and industrial power plants will find much information in a bulletin by the Bailey Meter Co., 1050 Ivanhoe road, Cleveland, on savings effected by Bailey boiler meters. It gives operating data, showing savings in over 20 installations of these meters, with indexes of the type, sizes and methods by which savings are effected.

PLATING MANUAL—An operating manual for copper, brass, bronze and zinc plating with du Pont copper and zinc cyanides has been prepared by the R. & H. chemicals department of E. I. du Pont de Nemours & Co., Wilmington, Del. It contains information on specifications and methods of using copper and zinc cyanides with sections devoted to instructions for making the plating solutions, operating, analyzing the solutions and cleaning the metal before plating.

MODERN ROLL TECHNIQUE

Detail

THE Pittsburgh Rolls Corporation exercises scrupulous care in all details of roll manufacture. Experienced Rolling Mill Men know what this means to the rolls they use. This attention to minute detail governed by years of experience in roll manufacture, has given the products of Pittsburgh Rolls Corporation an enviable position in the steel industry.

The standards of roll performance set up by the Pittsburgh Rolls Corporation are regarded by many as standards for the industry.

PHOENIX Steel
For unusual strength.
PHOENIX "A"—Steel Alloy
For strength and wear.
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For flat rolling where high finish of extremely thin gauge material is required to be free from all marks or defects.
PHOENIX Metal
PHOENIX "K" (Iron Alloy)
For strength, wear and finish.
PHOENIX Chill
PHOENIX Nickel Chill
For all flat rolling requiring finish.
Also Tube Mill Rolls of quality material best suited to the kind of service required.

PITTSBURGH ROLLS CORPORATION
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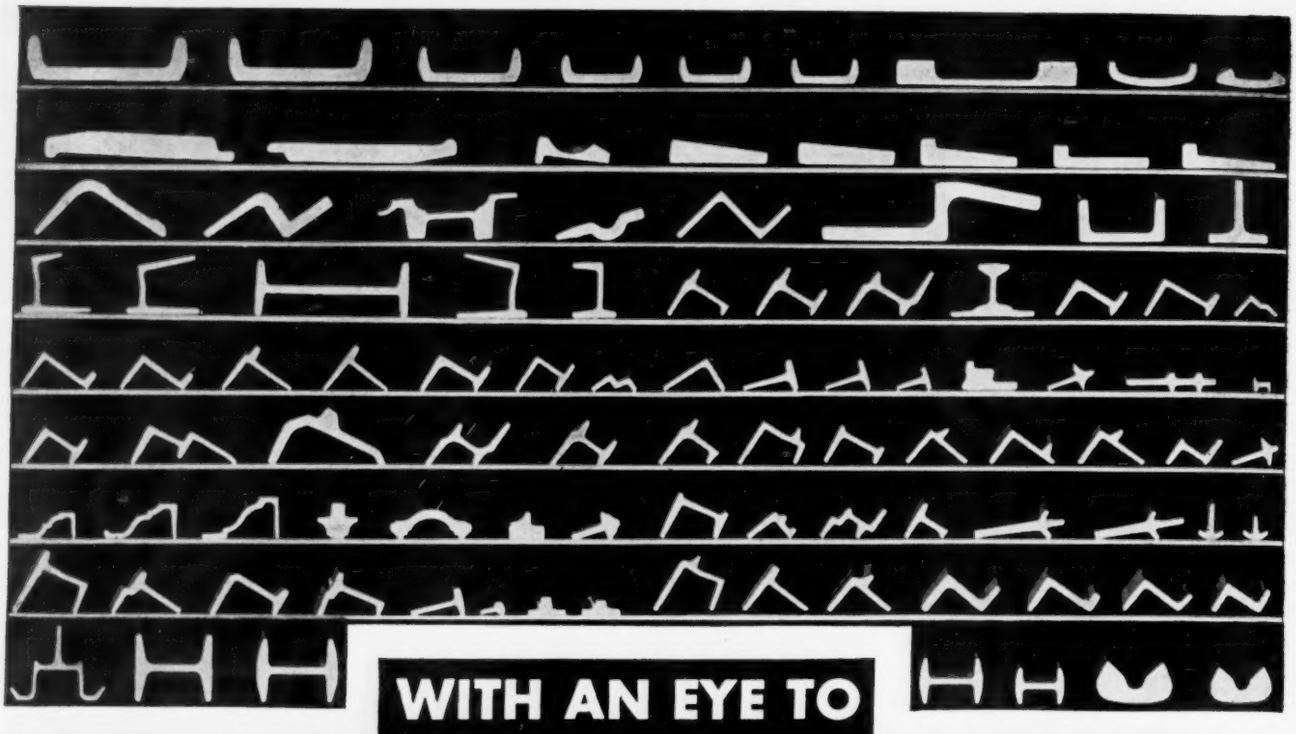
REVIEW THE PARTS OF YOUR PRODUCT



WITH AN EYE TO SPECIAL ROLLED SECTIONS

SPECIAL rolled-steel sections offer almost unlimited opportunities for the more rapid, economical production of intricate parts. The examples shown here of special sections rolled by Bethlehem, in its plant where special sections were pioneered and developed, merely suggest the possibilities in this method of parts manufacture. By carefully looking over your product, piece by piece, you may discover parts that could be made from special sections with either a saving in cost of manufacture or an improvement in the parts themselves. Or both. The shift to this economical method of parts production can often be made without radical change in design, although in many cases the savings in prospect are so substantial as to make complete redesign worth while. Bethlehem engineers will gladly assist in adapting special rolled sections to your requirements.

BETHLEHEM STEEL COMPANY BETHLEHEM STEEL **GENERAL OFFICES: BETHLEHEM, PA.**

District Offices: Atlanta, Baltimore, Boston, Bridgeport, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Houston, Indianapolis, Milwaukee, New York, Philadelphia, Pittsburgh, St. Louis, St. Paul, Washington, Wilkes-Barre, York. *Pacific Coast Distributor:* Pacific Coast Steel Corporation, San Francisco, Seattle, Los Angeles, Portland and Honolulu. *Export Distributor:* Bethlehem Steel Export Corporation, New York.

BETHLEHEM ROLLED SECTIONS

Steel Rate 30 Per Cent; Markets Fail To Rally

Seasonally High Consumption in Automobile Industry Expected To Provide New Impetus — Structural Awards Up — Scrap Prices Again Decline

WHILE steelworks operations in all districts recovered last week, to a national average of 30 per cent from 22 per cent in the week of July 4th, the immediate market for steel remains greatly depressed, and the outlook is obscured by uncertainties as to how quickly consumers can absorb the abnormal stocks they accumulated in June.

Steelmakers look chiefly to the automobile industry to supply the first and strongest propellant to overcome the midsummer inertia. July and August automobile production is expected to be seasonally strong, mainly because manufacturers plan to make in these months substantially all the cars they believe will be required for the remainder of the year.

This will enable them to get an early start in retooling in preparation for 1935 models, thereby averting the delay such as characterized the beginning of their 1934 models. Production last week increased to 65,000 cars, more than double the preceding week.

Structural shape awards also rebounded sharply, to 33,023 tons, mainly due to action on several large government projects, including 15,000 tons of piling for the Fort Peck, Mont., dam, and 3900 tons for a bridge at Bettendorf, Iowa. The Ford Motor Co. placed 3900 tons for two mill buildings at Dearborn, Mich.

Railroads Are Expected to Place Tonnages; Third Quarter Contracting on Low Plane

Many large construction projects sponsored with federal funds are nearing award. Steelmakers believe the government will soon put more money into the capital goods industries, and that the railroads, aided by improvement in their earnings, will make further purchases.

The Seaboard Air Line is inquiring for 100 all-steel 70-ton phosphate cars, and the Mexican Railway Co., for 50 all-steel freight cars. Baltimore & Ohio has purchased air-conditioning equipment for 31 coaches. Some orders are anticipated shortly for oil refinery equipment, the oil industry's rapid technical progress making much of its equipment obsolete.

Contracting for the third quarter is proceeding at an unusually slow rate. Practically the only incentive consumers have in making commitments under the revised steel code is to assure delivery. Some steelmakers are pointing out, however, that while the code now prohibits them from advancing prices during a three-months period this applies only to base prices, and not to extras on which a large proportion of the business is placed.

On the other hand, competition again is creating a feeling of uncertainty in the industry. A weakening influence is the President's order permitting a reduction up to 15 per cent below code prices on government work, and in some of steel specialties bids last week were 5 to 10 per cent under open market prices. The real test so far as finished steel is concerned is expected when the government takes bids next month on approximately 40,000 tons for naval vessels.

Structural Code May Effect Stabilization; Pig Iron Shipments Show Large Gain

Structural steel fabricators express confidence that approval of their code at Washington last week will have an immediate stabilizing effect in their industry. Large structural rivets have been reduced $2 a ton. While tin plate still resists the general sweep of price reductions, a tentative figure of $4 a ton has been agreed upon for a new tin mill product, with a lighter coating of tin to compete with copper-coated plate for the manufacture of oil cans.

Complete tabulations on pig iron shipments from lake merchant furnaces show a gain of nearly 300 per cent for the first half this year compared with last year, but order books for the third quarter are barren. Three southern stacks have been blown out. Iron ore receipts at lower lake ports this year, 6,418,945 tons, are the largest for the period in four years, but it is significant that five ore carriers have been laid up. Scrap prices, after steadying for several weeks have turned down, STEEL's iron and steel scrap composite off 8 cents to $10.29.

Steelworks operations last week increased 47 points to 93 per cent at Detroit; 6 to 61, New England; 4 to 22½, eastern Pennsylvania; 3 to 31, Chicago; 6 to 21, Pittsburgh; 2½ to 20, Birmingham; from zero to 21, Buffalo; 15 to 41, Cleveland; 6 to 30, Wheeling; and 15 to 30, Youngstown.

STEEL's iron and steel price composite holds at $34.23 and the finished steel composite at $54.10.

COMPOSITE MARKET AVERAGES

	July 14	July 7	One Month Ago June, 1934	Three Months Ago April, 1934	One Year Ago July, 1933	Ten Years Ago July, 1924
Iron and Steel Composite	$34.23	$34.23	$34.89	$34.18	$29.81	$39.78
Finished Steel Composite	54.10	54.10	55.08	53.90	47.20	63.53
Steelworks Scrap Composite	10.29	10.37	10.32	12.15	10.66	14.87

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week: Average for Last Month, Three Months and One Year Ago

	July 14, 1934	June, 1934	April, 1934	July, 1933
Finished Material				
Steel bars, Pittsburgh	1.80	1.90	1.85	1.60
Steel bars, Chicago	1.85	1.95	1.90	1.70
Steel bars, Philadelphia	2.09	2.19	2.15¼	1.91
Iron bars, Terre Haute, Ind.	1.75	1.85	1.60	1.65
Shapes, Pittsburgh	1.80	1.85	1.80	1.60
Shapes, Philadelphia	2.00½	2.05½	2.01¾	1.81½
Shapes, Chicago	1.85	1.90	1.85	1.70
Tank plates, Pittsburgh	1.80	1.85	1.80	1.60
Tank plates, Philadelphia	1.98½	2.03½	1.99¾	1.79½
Tank plates, Chicago	1.85	1.90	1.85	1.70
Sheets, No. 10, hot rolled, Pitts.	1.85	2.00	1.90	1.75
Sheets, No. 24, hot ann., Pitts.	2.45	2.65	2.50	2.25
Sheets, No. 24, galvan., Pitts.	3.10	3.25	3.10	2.85
Sheets, No. 10, hot rolled, Gary	1.95	2.10	2.05	1.80
Sheets, No. 24, hot anneal., Gary	2.55	2.75	2.65	2.35
Sheets, No. 24, galvan., Gary	3.20	3.35	3.25	2.95
Plain wire, Pittsburgh	2.30	2.30	2.25	2.10
Tin plate, per base box, Pitts.	5.25	5.25	5.25	4.25
Wire nails, Pittsburgh	2.60	2.60	2.50	2.05
Semifinished Material				
Sheet bars, open-hearth, Youngs.	$28.00	30.00	28.40	26.00
Sheet bars, open-hearth, Pitts.	28.00	30.00	28.40	26.00
Billets, open-hearth, Pittsburgh	27.00	29.00	27.80	26.00
Wire rods, Pittsburgh	38.00	38.00	37.20	35.00

	July 14, 1934	June, 1934	April, 1934	July, 1933
Pig Iron				
Bessemer, del. Pittsburgh	19.76	19.76	19.56	17.86
Basic, Valley	18.00	18.00	17.60	15.60
Basic, eastern, del. eastern Pa.	19.76	19.76	19.51	16.79
No. 2 foundry, del. Pittsburgh	19.26	19.26	19.06	17.36
No. 2 foundry, Chicago	18.50	18.50	18.25	16.75
Southern, No. 2, Birmingham	14.50	14.50	14.25	12.60
No. 2X, Eastern del. Philadelphia	20.63	20.63	20.38	17.28
Malleable, Valley	18.50	18.50	18.10	16.10
Malleable, Chicago	18.50	18.50	18.25	16.75
Lake Superior charcoal, del. Chi.	23.54	23.54	23.54	23.04
Gray forge, del. Pittsburgh	18.88	18.88	18.68	16.93
Ferromanganese, del. Pittsburgh	89.79	90.00	90.24	84.44
Scrap				
Heavy melting steel, Pittsburgh	$12.00	11.90	14.15	12.70
Heavy melt. steel, No. 2, east. Pa.	9.00	8.87	9.50	9.35
Heavy melting steel, Chicago	9.50	9.75	11.75	10.45
Rails for rolling, Chicago	10.75	11.25	12.75	11.15
Railroad steel specialties, Chicago	10.25	11.25	12.75	11.15
Coke				
Connellsville, furnace, ovens	3.60	3.60	3.30	2.40
Connellsville, foundry, ovens	4.60	4.60	4.55	2.85
Chicago, by-product foundry, del.	9.25	9.25	9.25	8.00

Steel, Iron, Raw Material and Metals Prices

Prices conform to American Iron and Steel Institute schedules. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.85c
Gary, base	1.95c
Chicago, del.	1.98c
New York, del	2.18c
Philadelphia, del.	2.14c
Birmingham, base	2.00c
St. Louis, del.	2.17c
F.o.b. cars, dock, Pacific ports	2.45c

HOT ROLLED ANN. No. 24

Pittsburgh, base	2.45c
Gary, base	2.55c
Chicago, del.	2.58c
Detroit, del.	2.65c
New York, del.	2.78c
Philadelphia, del.	2.74c
Birmingham, base	2.60c
St. Louis, del.	2.77c
F.o.b. cars, dock, Pacific ports	3.05c

GALVANIZED No. 24

Pittsburgh, base	3.10c
Gary, base	3.20c
Chicago, del	3.23c
Philadelphia, del.	3.39c
New York, del.	3.43c
Birmingham, base	3.25c
St. Louis, del	3.42c
San Francisco, f.o.b. cars, dock	3.70c

TIN MILL BLACK No. 28

Pittsburgh, base	2.75c
Gary, base	2.85c
St. Louis, del.	3.07c

COLD ROLLED No. 10

Pittsburgh, base	2.50c
Gary, base	2.60c
Detroit, delivered	2.70c
Philadelphia, del.	2.79c
New York, del	2.83c
F.o.b. cars, dock, Pacific ports	3.10c

COLD ROLLED No. 20

Pittsburgh, base	2.95c
Gary, base	3.05c
Detroit, delivered	3.15c
Philadelphia, del.	3.24c
New York, del	3.28c

ENAMELING SHEETS

Pittsburgh, No. 10	2.50c
Pittsburgh, No. 20	3.10c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh. Gary base, 10 cents higher

Tin plate, coke base contract	$5.25
Do., stock	$4.90
Long ternes, No. 24 unassorted	3.45c

Corrosion and Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel; sheets 35c; plates, 28c; bars, 24c; hot-rolled strip, 24.50c; cold-rolled strip, 2.00c.

	A	B	C	D
Bars	17c	18.5c	21c	26c
Plates	20c	21.5c	24c	29c
Sheets	25c	28c	31c	35c
Hot strip	17c	18.5c	21c	26c
Cold strip	22.5c	24c	27c	35c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 19/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.80c
New York, del	2.08c
Philadelphia, del.	1.98½c
Boston, del.	2.20c
Buffalo, del.	2.03½c
Chicago or Gary base	1.85c
Cleveland, del.	1.98½c
Birmingham, base	1.95c
Coatesville, base	1.90c
Sparrows Pt., base	1.90c
Pacific Coast, f.o.b. cars, dock	2.35c
St. Louis, del.	2.07c

Structural Shapes

Pittsburgh, base	1.80c
Philadelphia, del	2.00½c
New York, del.	2.05¼c
Boston, del.	2.18½c
Bethlehem, base	1.90c
Chicago, base	1.85c
Cleveland, del.	1.98½c
Buffalo, base	1.90c
Gulf ports	2.20c
Birmingham, base	1.95c
Pacific Coast, f.o.b. cars, dock	2.35c

Bars

SOFT STEEL

Pittsburgh, base	1.80c
Chicago or Gary	1.85c
Duluth, base	1.95c
Birmingham, base	1.95c
Cleveland, base	1.85c
Buffalo	1.90c
Detroit, del.	1.95c
Pacific Coast ports cars, dock, c.i.f.	2.35c
Philadelphia, del.	2.09c
Boston, del.	2.20c
New York, del.	2.13c
*Pitts., forg. qual.	1.95c-2.05c

RAIL STEEL
To Manufacturing Trade

Pittsburgh base	1.70c
Chicago or Gary, base	1.75c
Moline, Ill., base	1.75c
Cleveland, base	1.75c
Buffalo, base	1.80c

IRON

Terre Haute, Ind.	1.75c
Chicago	1.80c
Philadelphia, base	1.89c
Pittsburgh, refined	2.75c-7.50c

REINFORCING

New billet, cut lengths, carlots

Pittsburgh	2.05c
Chicago, Gary, Buffalo Cleve., Birm., Young	2.10c
Gulf ports	2.45c
Pacific coast ports	2.35c
Philadelphia, del.	2.34c

Rail Steel

Pittsburgh, base	1.90c
Chicago, Buffalo, Cleveland, Birm., Young	1.95c
Gulf ports	2.30c
Pacific coast ports	2.45c

Wire Products □ □

(Prices apply to straight or mixed carloads; pool cars, or less, 10c up. 10% dis. on nail extras on straight or mixed carloads to one consignee.)

Base, Pittsburgh-Cleveland (Per 100-lb. keg)

Standard wire nails	$2.60
Cement coated nails	2.60
Galvanized nails, 15 gage and coarser	4.60c
Do., 16 gage and finer	5.10c

(Per pound)

Polished staples	3.30c
Galvanized fence staples	3.55c
Barbed wire, galv.	3.00c
Annealed fence wire	2.45c
Galvanized fence wire	2.80c
Woven wire fencing (base column, c.l.)	$63.00
Plain wire, 6-9 gage to mfg. trade	2.30c

Anderson, Ind., Chicago up $1; Duluth up $2; Birmingham up $3.

Spring wire	3.20c

Chicago and Waukegan $1 higher, Worcester $2 higher.

Cold-Finished Carbon Bars and Shafting □ □

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs	2.10c
20,000 to 59,999 lbs.	2.05c
60,000 to 99,999 lbs.	2.00c
100,000 lbs. and over	1.97½c

Gary, Ind., Cleveland, up 5c; Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c.

Alloy Steel Bars □

Hot Rolled

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem 2.45c

Alloy S.A.E.	Alloy Diff.	Alloy S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20
4100 .15 to .25		Mo	0.50
4600 .20 to .30	Mo. 125-1.75	Ni.	1.05
5100 .80-1.10	Cr.		0.45
5100 Cr. spring			base
6100 bars			1.20
6100 spring			0.70
Cr., Ni., Van.			1.50
Carbon van.			0.95
9250....Carbon base plus extras			

Strip and Hoops □

Hot strip to 23⅞-in. Pittsburgh	1.85c
Chicago, base	1.95c
Birmingham, base	2.00c
Detroit, delivered	2.05c
Phila., delivered	2.14c
New York, del	2.18c
Cooperage hoop, Pittsburgh	1.95c
Chicago	2.05c
Cold-rolled strip, Pitts., Cleve.	2.60c
Worcester, Mass.	2.80c

Rails, Track Material □

(Gross Tons)

Standard rails, mill	$36.37½
Relay rails, Pitts. 24-45 lbs.	$27.00
50-60 lbs.	$24.00
70-75 lbs.	$18.00
80-85 lbs.	$25.00
100 lbs.	$26.00
Light rails, billet qual., Pittsb., Chi.	$35.00
Do., reroll. qual.	$34.00
Angle bars, mills	2.55c
Spikes, R. R. base	2.40c
Track bolts, base	3.55c
Tie plates, base	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $5; 16 and 20 lbs., up $1; 12 lbs., up $8; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

Bolts and Nuts □ □

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots. Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	70 off
Rolled thread, ½ x 6 and smaller	70 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts, without nuts	70 off
Tire bolts	60 off
Stove bolts, 75 off in pkgs.; 83 off in bulk, 15,000 or more of a size.	
Rolled thread machine bolts, ½x6 and smaller,	70 off
Step bolts	66 off
Elevator bolts	66 off

NUTS

Semifinished	70 off

HEXAGON CAP SCREWS

Milled	80-10-10 off
Upset 1-in., smaller	85 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller	75-10 off
Do., larger than 1-in.	75-10 off
Headless set screws	75 off

Rivets, Wrought Washers

*Struc., c. l., Pittsburgh, Cleveland	2.90c
*Struc., c. l., Chicago	3.00c
⅜-in. and smaller, Pitts., Chi., Cleve.	70 and 5 off
Wrought washers, Pitts., Chi., Phila.	6.00 off

Cut Nails □ □

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more no discount on size extras	$3.05
Do. less than 5 kegs; no discount on size extras	$3.20

Piling □ □

Pittsburgh	2.15c
Chicago, Buffalo	2.25c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads, Gary, Ind., 2 points less. Chicago delivered 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

Steel

In.	Blk.	Gal.
¼ and ⅜	53½	35
½	58½	47
¾	62	52
1—3	64	55

Iron

½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

LAP WELD

Steel

2	60	51
2½—3	63	54
3½—6	65	56
7 and 8	64	54
9 and 10	63½	53½

Iron

2	37	22½
2½—3½	38	25
4—8	40	28½

LINE PIPE

Steel

½, butt weld	57½
⅛-inch, but weld	50½
¼—⅜, buttweld	52½
¾, butt weld	61
1—3, butt weld	63
2-inch, lap weld	59
2½—3, lap weld	62
3½—6, lap weld	64
7—8, lap weld	63

Iron

⅛—1½-inch, black and galv.	take 4 pts., over;
2½—6-inch	2 pts. over discounts for same sizes, standard pipe lists. 8—12-inch, no extra.

BOILER TUBES

C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3½	50	3	17
4	52	3¾—3½	18
4½—5	42	4	20
		4½	21

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron.

Lapwelded steel: 2000 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron; 10,000 pounds to carloads, base less 5%; under 10,000 pounds, two points under base only.

SEAMLESS BOILER TUBES

Under date of May 15 in lots of 40,000 pounds or more for cold-drawn boiler tubes and in lots of 40,000 pounds or feet or more for hot-finished boiler tubes, revised prices are quoted for 55 cold-drawn boiler tube sizes ranging from ¼ to 6-inch outside diameter in 30 wall thicknesses, decimal equivalent from 0.035 to 1.000, on a dollars and cents basis per 100 feet and per pound.

Hot-finished carbon steel boiler tube prices also under date of May 15 range from 1 through 7 inches outside diameter, inclusive, and embrace 47 size classifications in 22 decimal wall thicknesses ranging from 0.109 to 1.000, prices also being on a lb. and 100 ft. basis.

Seamless Tubing □

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe □

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$38.00-39.00
4-in., Birmingham	41.00-42.00
4-in., Chicago	49.00-50.00
6 to 24-in., Chicago	46.00-47.00
3-in & over, east fdy	42.00
Do., 4-in.	45.00

Class A pipe $2 over Class B. Stnd. fitgs., Birm. base..$100.00

Semifinished Steel □

BILLETS AND BLOOMS

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., and Youngstown	$27.00
Philadelphia	32.30
Duluth	31.00
Forging, Pitts., Chi. and Buffalo	32.00
Forging, Duluth	36.00

SHEET BARS

Pitts., Cleve., Young., Chi., Buff., Canton, O., and Sparrows Point, Md.	28.00

SLABS

Pitts., Cleve., Young.	27.00

WIRE RODS

Pitts., Cleveland	38.00
Chicago	39.00
Worcester, Mass.	40.00

SKELP

Pitts., Chicago	1.70c

Coke □ □ □

Price Per Net Ton

BEEHIVE OVENS

Connellsville Fur.	$3.60- 3.85
Connellsville fdry	4.60
Connell, prem, fdy	5.35
New River fdry	6.00
Wise county fdry	4.25- 5.00
Wise county fur.	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.71- 9.31
Chi., ov., outside del.	8.50
Chicago, del	9.25
New England, Del.	10.50
St. Louis, del.	9.25
Birmingham, ovens	6.00
Indianapolis, del.	8.75
Cincinnati, del.	9.30
Cleveland, del.	9.25
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.50
Philadelphia, del.	9.00

Coke By-Products □

Per gallon, producers' plants.

Tank lots	Spot
Pure benzol	$0.19
90 per cent benzol	$0.19
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per lb. f.o.b. New York

Phenol (200 lb. drums)	0.163c
Do. (100 lbs.)	0.173c

Eastern Plants, Per Pound.

†Naphthalene flakes and balls, in bbl.	6.00

Per 100 lb. Atlantic seaboard

Sulphate of ammonia	$1.25

†Western prices ½-cent up.

Pig Iron

Delivered prices do not include switching charges except as noted. No. 2 foundry iron is 1.75-2.25 silicon; 25-cent differentials apply for each 0.25 silicon above 2.25. Gross tons.

BASING POINTS:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$19.50	$20.00	$19.00	$20.50
Birdsboro, Pa.	19.50	20.00	19.00	20.50
Birmingham, Ala., southern del.	14.50	.....	13.50	19.00
Buffalo	18.50	19.00	17.50	19.50
Chicago	18.50	18.50	18.00	19.00
Cleveland	18.50	18.50	18.00	19.00
Detroit	18.50	18.50	18.00	19.00
Duluth	19.00	19.00	.....	19.50
Erie, Pa.	18.50	19.00	18.00	19.50
Everett, Mass.	19.50	20.00	19.00	20.50
Granite City, Ill.	18.50	19.00	18.00	.....
Hamilton, O.	18.50	18.50	18.00	19.00
Jackson, O.	20.25	20.25	19.75	.....
Neville Island, Pa.	18.50	18.50	18.00	19.00
Provo, Utah	17.50	.....	17.00	.....
Sharpsville, Pa.	18.50	18.50	18.00	19.00
Sparrows Point, Md.	19.50	.....	19.00	.....
Swedeland, Pa.	19.50	20.00	19.00	20.50
Toledo, O.	18.50	18.50	18.00	19.00
Youngstown, O.	18.50	18.50	18.00	19.00
DELIVERED FROM BASING POINTS:				
Akron, O., from Cleveland	19.76	19.76	19.26	20.26
Baltimore from Birmingham	20.02	.....	19.90	.....
Boston from Birmingham	19.62	.....	19.50	.....
Boston from Everett, Mass.	20.00	20.50	19.50	21.00
Boston from Buffalo	20.00	20.50	19.50	21.00
Brooklyn, N. Y., from Bethlehem	21.77	22.27	.....	.....
Brooklyn, N. Y., from Bmghm.	21.39	.....	.....	.....
Canton, O., from Cleveland	19.76	19.76	19.26	20.26
Chicago from Birmingham	†18.72	.....	18.60	.....
Cincinnati from Hamilton, O.	19.51	19.51	19.01	.....
Cincinnati from Birmingham	19.13	.....	19.01	.....
Cleveland from Birmingham	18.62	.....	18.50	.....
Indianapolis from Hamilton, O.	20.77	20.77	20.27	21.27
Mansfield, O., from Toledo, O.	20.26	20.26	19.76	20.76
Milwaukee from Chicago	19.50	19.50	19.00	20.00
Muskegon, Mich., from Chicago, Toledo or Detroit	21.40	21.40	20.90	21.90
Newark, N. J., from Birmingham	20.51	.....	.....	.....
Newark, N. J., from Bethlehem	20.89	21.39	.....	.....
Philadelphia from Birmingham	19.88	.....	19.76	.....
Philadelphia from Swedeland, Pa.	20.26	20.76	19.76	.....
Pittsburgh dist. from Neville Island	(Neville Island base, plus 63c, 76c and $1.13 switching chgs.)			
Saginaw, Mich., from Detroit	20.60	20.60	20.10	21.10
St. Louis from Granite City, Ill.	19.00	19.50	18.50	.....
St. Louis from Birmingham	18.62	.....	18.50	.....
St. Paul from Duluth	20.94	20.94	.....	21.44

†Over 0.70 phos.

LOW PHOS.

Basing Points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.—$23.50. Basing Point: †Johnson City, Tenn.—$23.50 †Off grade material is $19.50

Philadelphia, standard and copper bearing 24.63

GRAY FORGE		CHARCOAL	
Valley furnace	18.25	Lake Superior fur.	21.00
Pitts. dist. fur.	18,25	Do., del. Chicago	24.04

SILVERY†

Jackson County, O., base; 6%—$22.75; 7—$23.75; 8—$24.75; 9—$25.75; 10—$26.75; 11—$27.75. Buffalo base prices $1.25 higher.

BESSEMER FERROSILICON†

Jackson County, O., base; 10%—$27.75; 11—$28.75; 12—$30.25; 13—$31.75; 14—$33.25; 15—$34.75; 16—$36.25. Buffalo base prices $1.25 higher.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Iron Ore

LAKE SUPERIOR ORE
Gross ton, 51½%
Lower Lake Ports

Old range bessemer	$4.80
Mesabi nonbess.	4.50
High phosphorus	4.40
Mesabi bessemer	4.65
Old range nonbess.	4.65

EASTERN LOCAL ORES
Cents, unit, del. E. Pa.

Foundry and basic, 56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos. 58-60% (nom.)	10.00-10.50

FOREIGN ORE
Cents per unit, f.a.s. Atlantic ports (nominal)

Foreign manganiferous ore, 45.55% iron, 6-10% man.	10.00
No. Afr. & low phos.	9.50
Swedish basic, 65%	9.00
Swedish low phos.	9.50
Spanish No. Africa basic, 50 to 60%.	9.00
Tungsten, spot, sh. ton unit, duty pd.	$17.25-17.75
N. F. fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$18.00

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%	24.00
So. African, 52%	24.00
So. Afr., 49-51%	22.00
Indian, 58-50%	nominal
Indian, 48-50%	nominal

Refractories

Per 1000 f.o.b. Works

FIRE CLAY BRICK
First Quality

Pa., Ill., Ky., Md., Ga., Mo.	$45.00
Alabama	48.00

Second Quality

Pa., Ill., Ky., Md., Mo., Ga., Ala.	40.00

Ohio

First quality	$40.00
Intermediary	36.00
Second quality	25.00

MALLEABLE BUNG BRICK

All bases	50.00

SILICA BRICK

Pennsylvania	$45.00
Joliet, E. Chicago	54.00
Birmingham, Ala.	52.00

MAGNESITE

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases	$45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases	40.00
Domestic dead-burned grains, net ton f.o.b. Chewelah, Wash.	22.00

BASIC BRICK
Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Magnesite brick	$65.00
Chrome brick	45.00
Chemically bonded magnesite	55.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$19.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$17.00

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82% tidewater, duty paid	85.00
Do., Balti. base	85.00
Do., del. Pittsburgh	89.79
Spiegeleisen, 19-20%, dom. fur. spot†	26.00
Ferrosilicon 50%, freight all., cl.	77.50
Do., less carload	85.00
Do., 75 per cent	126-130.00
Spot, $5 a ton higher.	
Silicomang., 2½ carb. 2% carbon 95.00; 1%	90.00 105.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Ferrotungsten, stand., lb. cont. del.	1.35- 1.45
Ferrovanadium, 35 to 40% lb., cont., on analysis	2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt. allow., lb.	7.00
Do., under 1 ton	7.50
Ferrophosphorus, per ton, c. l., 17-19%, Rockdale, Tenn., basis, 18%, $2 unitage	42.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $2.75 unitage	55.00
Ferromolybdenum, stand. 50-60%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads, Quan. diff. apply.

Nonferrous Mill Products

F.o.b. mill base, cents per lb. except as specified. Copper, brass products based on 9.00c Conn. copper

Sheets

Yellow brass (high)	14.50
Copper, hot rolled	16.00
Lead, cut, to jobbers	7.50
Zinc, 100-lb. base	9.50

Tubes and Pipes

High yellow brass	17.00
Seamless copper	17.25

Rods

High yellow brass	13.00
Copper, hot rolled	13.25

Anodes

Copper untrimmed	13.75

Wire

Yellow brass (high)	15.00

Old Metals

Deal, buying prices, cents lb.

No. 1 Composition Red Brass	
*New York	4.50- 4.75
*Chicago	4.25- 4.50
*Cleveland	4.75- 5.00
St. Louis	4.75- 5.00
Heavy Copper and Wire	
*New York	6.12½-6.37½
*Chicago, No. 1	6.00- 6.25
Cleveland	5.75- 6.00
St. Louis	5.50- 5.75
Composition Brass Borings	
New York	4.25- 4.50
Light Copper	
*New York	4.75- 5.00
*Chicago	4.75- 5.00
*Cleveland	4.75- 5.00
St. Louis	4.75- 5.00
Light Brass	
*Chicago	2.25- 2.50
Cleveland	2.75- 3.00
Lead	
New York	2.87½-3.12½
Cleveland	2.75- 2.90
Chicago	2.75- 3.00
St. Louis	3.00- 3.15
Zinc	
New York	2.00- 2.25
Cleveland	2.00- 2.25
St. Louis	2.50- 2.75
Aluminum	
Clips, soft, Cleve.	12.00-12.50
Borings, Cleveland	6.00- 6.25
Mixed, cast, Cleve.	9.25- 9.75
Mixed cast, St. L.	9.00-10.00

Secondary Metals

Brass ingot, 85-5-5-5	8.75
Stand. No. 12 Alum.	14.00

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	9.00-10.00
Boston, dealers	5.50- 5.75
Buffalo, No. 1	10.00-10.50
Buffalo, No. 2	8.50- 9.00
Chicago, No. 1	9.25- 9.75
Cleveland, No. 1	9.00- 9.50
Cleveland, No. 2	8.50- 9.00
Detroit, No. 1	8.00- 8.50
Detroit, No. 2	7.00- 7.50
Eastern Pa.	10.00-10.50
Eastern Pa., No. 2	8.50- 9.00
Federal, Ill.	6.75- 7.00
Granite City, R. R.	7.50- 8.00
Granite City, No. 2	6.50- 7.00
N. Y., deal. R. R.	7.00- 8.00
N. Y., deal. No. 2	5.50- 6.50
Pittsburgh, No. 1	11.75-12.25
St. Louis	6.75- 7.00
Valleys, No. 1	11.50-12.00

COMPRESSED SHEETS

Buffalo, dealers	8.50- 9.00
Chicago, factory	8.50- 9.00
Cleveland	8.50- 9.00
Detroit	8.00- 8.50
E. Pa., new mat.	9.50-10.00
Pittsburgh	11.25-11.75
St. Louis	5.00- 5.50
Valleys	11.00-11.50

BUNDLED SHEETS

Buffalo	6.50- 7.00
Cincinnati, del.	6.50- 7.00
Cleveland	7.00- 7.50
Pittsburgh	10.25-10.75
St. Louis	4.00- 4.25

SHEET CLIPPINGS LOOSE

Chicago	4.50- 5.00
Cincinnati	5.00- 5.50
Detroit	4.50- 5.00
St. Louis	3.75- 4.25

STEEL RAILS, SHORT

Birmingham	10.50-11.50
Buffalo	13.00-13.50
Chicago (3 ft.)	10.25-10.75
Chicago (2 ft.)	10.75-11.25
Cincinnati, del.	10.50-11.00
Detroit	10.00-10.50
Pitts., open-hearth, 3 ft. and less	14.00-14.50
St. Louis, 2 ft. & less	9.50-10.00

STEEL RAILS, SCRAP

Boston	5.75- 6.00
Chicago	9.25- 9.75
Pittsburgh	11.75-12.25

STOVE PLATE

Birmingham	7.00- 7.50
Boston, dealers	3.25- 3.75
Buffalo	8.50- 9.00
Chicago, net	6.50- 7.00
Cincinnati, dealers	5.00- 5.50
Detroit, net	6.00- 6.50
Eastern Pa.	8.50
N. Y., deal. fdry.	6.00
St. Louis	6.00- 6.50

COUPLERS, SPRINGS

Buffalo	13.00-13.50
Chicago, springs	10.00-10.50
Eastern Pa.	13.50-14.00
Pittsburgh	13.75-14.25
St. Louis	8.00- 8.50

ANGLE BARS—STEEL

Chicago	10.00-10.50
St. Louis	7.75- 8.25

LOW PHOSPHORUS

Buffalo, billets and bloom crops	13.00-14.00
Cleveland, billet, bloom crops	13.00-13.50
Eastern Pa. crops	15.00-15.50
Pittsburgh, billet, bloom crops	14.50-15.00
Pittsburgh, sheet bar crops	13.50-14.00

FROGS, SWITCHES

Chicago	9.25- 9.75
St. Louis, cut	8.00- 8.50

SHOVELING STEEL

Chicago	9.25- 9.75
Federal, Ill.	6.75- 7.00
Granite City, Ill.	6.75- 7.00

RAILROAD WROUGHT

Birmingham	6.50- 7.00
Boston, dealers	6.00- 6.50
Buffalo, No. 1	7.50- 8.00
Buffalo, No. 2	10.00-10.50
Chicago, No. 1 net	8.00- 8.50
Chicago, No. 2	9.25- 9.75
Cincinnati, No. 2	7.50- 8.00
Eastern Pa.	10.00-10.50
N. Y., No. 1 deal.	7.25- 7.75
St. Louis, No. 1	6.50- 7.00
St. Louis, No. 2	7.50- 7.75

SPECIFICATION PIPE

Boston	3.50- 4.00
Eastern Pa.	9.00
New York, dealers	3.50- 3.75

BUSHELING

Buffalo, No. 1	8.50- 9.00
Chicago, No. 1	8.25- 8.75
Cinci., No. 1 deal.	6.00- 6.50
Cincinnati, No. 2	7.00- 7.25
Cleveland, No. 2	7.00- 7.25
Detroit, No. 1 new	7.00- 7.50
Valleys, new No. 1	11.00-11.50

MACHINE TURNINGS

Birmingham	4.50- 5.00
Boston, dealers	1.75- 2.00
Buffalo	4.00- 4.50
Chicago	5.00- 5.50
Cincinnati, dealers	4.50- 5.00
Cleveland	5.00- 5.50
Detroit	4.50- 5.00
Eastern Pa.	6.50
New York, dealers	2.00- 2.50
Pittsburgh	7.50- 8.00
St. Louis	4.00- 4.50
Valleys	7.50- 8.00

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	3.25- 3.50
Buffalo	6.00- 6.50
Cincinnati, dealers	4.50- 5.00
Cleveland	5.50- 6.00
Detroit	5.50- 6.00
Eastern Pa.	5.00- 5.50
New York, dealers	1.50- 1.75
Pittsburgh	7.25- 7.75

CAST IRON BORINGS

Birmingham, plain	4.50- 5.00
Boston, chemical	8.50- 9.00
Boston, dealers	3.25- 3.50
Buffalo	6.00- 6.50
Chicago	5.25- 5.75
Cincinnati, dealers	4.50- 5.00
Cleveland	6.00- 6.50
Detroit	5.50- 6.00
E. Pa., chemical	12.00-15.00
New York, dealers	1.50- 1.75
Pittsburgh	7.25- 7.75
St. Louis	4.00- 4.25

PIPE AND FLUES

Cincinnati, dealers	4.75- 5.25

RAILROAD GRATE BARS

Buffalo	6.50- 7.00
Chicago, net	6.75- 7.25
Cincinnati	4.50- 5.00
Eastern Pa.	8.50
New York, dealers	5.00- 5.50
St. Louis	4.00- 4.50

FORGE FLASHINGS

Boston, dealers	3.75- 4.25
Buffalo	8.50- 9.00
Cleveland	8.00- 8.50
Detroit	6.50- 7.00

FORGE SCRAP

Boston, dealers	4.00- 4.50
Chicago, heavy	10.00-10.50
Eastern Pa.	9.50-10.00

ARCH BARS, TRANSOMS

St. Louis	10.00-10.50

AXLE TURNINGS

Boston, dealers	4.00- 4.50
Buffalo	8.50- 9.00
Chicago, elec. fur.	8.50- 9.00
Cleveland	6.00- 6.50
Eastern Pa.	10.00-10.50
St. Louis	6.00- 6.25

STEEL CAR AXLES

Birmingham	10.00-10.50
Boston, ship, point.	9.00- 9.50
Buffalo	13.00-13.50
Chicago, net	10.75-11.25
Eastern Pa.	14.00-15.00
St. Louis	10.00-10.50

SHAFTING

Boston, ship point.	10.50-10.75
Eastern Pa.	15.00-15.50
New York, dealers	10.75-11.25
St. Louis	11.00-11.50

CAR WHEELS

Birmingham, iron	8.50- 9.00
Boston, iron deal.	5.75- 6.00
Buffalo, iron	12.00-12.50
Buffalo, steel	13.00-13.50
Chicago, iron	10.00-10.50
Chicago, rolled steel	10.00-10.50
Cincinnati, iron	8.00- 8.50
Eastern Pa., iron	11.50-12.00
Eastern Pa., steel	13.50-14.00
Pittsburgh, iron	11.25-11.75
Pittsburgh, steel	13.75-14.25
St. Louis, iron	7.50- 8.00
St. Louis, steel	8.00- 8.50

NO. 1 CAST SCRAP

Birmingham	9.00- 9.50
Boston, No. 2	6.00
Boston, tex. con.	10.50-11.00
Buffalo, cupola	9.50-10.00
Buffalo, mach.	11.00-11.50
Chicago, agri. net	7.25- 7.75
Chicago, mach. net	8.50- 9.00
Chi., railroad net	8.00- 8.50
Cinci., mach. cup.	9.50-10.00
Cleveland, cupola	10.75-11.25
Detroit, net	8.50- 9.00
Eastern Pa., cupola	11.50-12.00
Pittsburgh, cupola	13.00-13.50
San Francisco, del.	13.50-14.00
Seattle	7.00- 8.50
St. Louis, No. 1	7.00- 7.50
St. L., No. 1 mach.	8.50- 9.00

HEAVY CAST

Boston, del.	5.50- 5.75
Buffalo, break.	7.75- 8.25
Cleveland, break.	7.50- 8.00
Detroit, break.	6.50- 7.00
Detroit, auto net	9.00- 9.50
Eastern Pa.	10.50
N. Y., No. 1, deal.	6.50- 6.75
N. Y., break. deal.	6.50- 6.75
Pittsburgh	10.00-10.50

MALLEABLE

Boston, consum.	12.00-12.50
Buffalo	11.50-12.00
Chicago, R. R.	9.50-10.00
Cincinnati, agri. del.	8.00- 8.50
Cinci. R. R. del.	9.00- 9.50
Cleveland, rail	11.00-11.50
Detroit, auto	8.50- 9.00
St. Louis, R. R.	8.25- 8.75
Eastern Pa., R. R.	11.50-12.00

RAILS FOR ROLLING

5 feet and over

Birmingham	10.00-11.00
Boston, dealers	7.00- 7.25
Buffalo	12.00-12.50
Chicago	10.50-11.00
Eastern Pa.	12.00-13.00
New York, dealer	7.50- 8.00
St. Louis	9.00- 9.50

LOCOMOTIVE TIRES

Chicago (cut)	10.00-10.50
St. Louis, No. 1	9.50- 10.00

LOW PHOS. PUNCHINGS

Buffalo	13.75-14.25
Chicago	10.50-11.00
Eastern Pa.	14.50-15.00
Pittsburgh	13.50-14.00

Nonferrous Metal Prices of the Week

Spot unless otherwise specified. Cents per pound

	Copper: Electro., del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin New York: Spot	Straits Tin New York: Futures	Lead New York	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Antimony Spot, N. Y.	Ingot Nickel
July 7	9.00	9.12½	8.75	51.95	52.02½	3.75	3.60	4.35	*22.90	7.75	36.00
July 9	9.00	9.12½	8.75	51.80	51.87½	3.75	3.60	4.35	*22.90	7.75	36.00
July 10	9.00	9.12½	8.75	51.80	51.87½	3.75	3.60	4.35	*22.90	7.75	36.00
July 11	9.00	9.12½	8.75	51.85	51.92½	3.75	3.60	4.32½	*22.90	8.00	36.00
July 12	9.00	9.12½	8.75	51.85	51.92½	3.75	3.60	4.32½	*22.90	7.87½	36.00
July 13	9.00	9.12½	8.75	51.87½	51.95	3.75	3.60	4.30	*22.90	8.12½	36.00

*Nominal range 19.00c to 22.90c.

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	
Baltimore*	2.90c
Boston††	2.95c
Buffalo	2.95c
Chattanooga	3.31c
Chicago	2.95c
Cincinnati	3.15c
Cleveland	2.95c
Detroit	3.03½c
Houston	3.00c
Los Angeles	3.70c
New Orleans	3.40c
New York‡(d)	3.22c
Pittsburgh(h)	2.90c
Philadelphia*	2.90c
San Francisco	3.60c
Seattle	3.60c
St. Louis	3.29c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS	
Portland	3.40c
Chattanooga	3.31c
Baltimore*	3.00c
Chicago	2.75c
Cincinnati	3.15c
New York‡(d)	3.32c
Philadelphia*	2.90c
St. Louis	3.29c
Tulsa	3.25c

REINFORC. BARS	
Buffalo	1.95c
Chattanooga	3.31c
Chicago	2.10c-2.60c
Cleveland (c)	1.97½c
Cincinnati	3.25c
Houston	3.25c
Los Ang., cl.	2.15c
New Orleans	3.50c
Pitts., plain(h)	3.05c
Pitts., twisted squares (h)	3.175c
San Francisco	2.45c
Seattle	3.50c
St. Louis	3.44c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES	
Baltimore*	2.90c
Boston††	3.17c
Buffalo	3.20c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.40c
Cleveland	3.31c
Detroit	3.40c
Houston	3.00c
Los Angeles	3.70c
New Orleans	3.60c
New York(d)	3.37c
Philadelphia*	2.95c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.49c
St. Paul	3.25c
Tulsa	3.50c

PLATES	
Baltimore*	2.90c
Boston††	3.18c
Buffalo	3.20c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.40c
Cleveland, ¼-in. and over	3.31c
Detroit	3.40c
Detroit, ⅜-in.	3.65c
Houston	3.00c
Los Angeles	3.70c
New Orleans	3.60c
New York(d)	3.40c
Philadelphia*	2.95c
Phila. floor	4.95c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.49c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE	
Baltimore*	3.05c
Boston††	3.25c
Buffalo	3.10c
Chattanooga	3.51c
Chicago	3.05c
Cincinnati	3.20c
Cleveland	3.11c
Det., 8-10 ga.	3.13½c
Houston	3.35c
Los Angeles	3.80c
New Orleans	3.70c
New York	3.27c
Portland	3.75c
Philadelphia*	3.05c
Pittsburgh(h)	2.95c
San Francisco	3.75c
Seattle	3.75c
St. Louis	3.44c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK	
Baltimore*†	3.56c
Boston (g)	3.95c
Buffalo	3.25c
Chattanooga	4.21c
Chicago	3.90c
Cincinnati	4.05c
Cleveland	3.96c
Detroit	3.98½c
Los Angeles	4.35c
New York	3.85c
Philadelphia*†	3.60c
Pittsburgh**	3.60c
Portland	4.40c
San Francisco	4.40c
Seattle	4.40c
St. Louis	4.34c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS	
Baltimore *†	4.21c
Buffalo	4.00c
Boston (g)	4.55c
Chattanooga	4.86c
Chicago (h)	4.55c
Cincinnati	4.70c
Cleveland	4.61c
Detroit	4.70c
Houston	4.40c
Los Angeles	5.05c
New Orleans	4.95c
New York	4.50c
Philadelphia*†	4.25c
Pitts.** (h)	4.15-4.45c
Portland	5.00c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.94c
St. Paul	4.19c
Tulsa	5.10c

BANDS	
Baltimore*	3.15c
Boston††	3.25c
Buffalo	3.30c
Chattanooga	3.61c
Chicago	3.30c
Cincinnati	3.45c
Cleveland	3.36c
Detroit, ⅜-in. and lighter	3.38½c
Houston	3.25c
Los Angeles	3.90c
New Orleans	3.95c
New York(d)	3.62c
Philadelphia	3.15c
Pittsburgh(h)	3.70c
Portland	3.90c
San Francisco	4.05c
Seattle	3.90c
St. Louis	3.69c
St. Paul	3.20c
Tulsa	3.45c

HOOPS	
Baltimore	2.80c
Boston	4.25c
Buffalo	3.55c
Chicago	3.30c
Cincinnati	3.45c
Det., No. 14 and lighter	3.38½c
New York	3.62c
Philadelphia	3.40c
Pittsburgh(h)	3.70c
Seattle	5.60c
St. Paul	3.75c

COLD FIN. STEEL	
Baltimore(c)	3.71c
Boston	4.00c-4.50c
Buffalo (h)	3.55c
Chattanooga*	4.06c
Chicago (h)	3.50c
Cincinnati	3.70c
Cleveland(h)	3.50c
Detroit	3.63½c
Los Ang.(f)(d)	4.95c
New Orleans	4.30c
New York	3.92c-4.42c
Philadelphia	3.73c
Pittsburgh(h)	3.45c
Portland (f)	4.75c
San Fran.(f)(d)	5.95c
Seattle(f)(d)	4.75c
St. Paul	3.20c
St. Louis	3.74c
Tulsa	4.65c

COLD ROLL. STRIP	
Boston, 0.100-in., 500 lb. lots	5.35c
Buffalo	5.25c
Chicago (b)	3.45c
Cincinnati(b)	3.42c
Cleveland (b)	3.20c
Detroit	3.33c
Philadelphia	4.00c
New York	4.70c
St. Louis	5.74c

(b) Plus straightening, cutting and quantoty differentials.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) 50 bundles or over.
(h) Outside delivery, 10c less.

‡Domestic bars.
*Plus quan. extras.
**Under 25 bundles.
*†50 or more bundles.
†New extras apply.
††Base 40,000 lbs. extras on less.

Prices at Detroit, Cleveland, Chicago, Pittsburgh, Cincinnati, Chattanooga, New York, Boston, St. Louis on heavier lines are subject to new quantity differentials:

399 pounds and less, up 50 cents; 400 to 9999 pounds, base; 10,000 to 19,999 pounds, 15 cents under; 20,000 to 39,999 pounds, 25 cents under; 40,000 pounds and over, 35 cents under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, July 12

Export Prices f. o. b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports £ s d		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665 £ s d	
PIG IRON				
Foundry, 2.50-3.00 Silicon.	$15.12	3 0 0	$7.91	1 12 6
Basic bessemer	13.61	2 14 0*	7.30	1 10 0
Hematite, Phos. .03-.05	15.25	3 0 6	....	.....
SEMIFINISHED STEEL				
Billets	$27.72	5 10 0	$11.44	2 7 0
Wire rods, No. 5 gage	39.31	7 16 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$39.06	7 15 0	$26.77	5 10 0
Merchant bars	1.69c	7 10 0	.69c to .72c	3 2 6 to 3 5 0
Structural shapes	1.66c	7 7 6	.68c	3 1 6
Plates, †¼ in. or 5 mm.	1.80c	8 0 0	.91c	4 2 6
Sheets, black, 24 gage or 0.5 mm.	2.08c	9 5 0	1.13c to 1.16c	5 2 6 to 5 5 0
Sheets, gal., 24 gage, corr.	2.53c	11 5 0	1.43c	6 10 0
Bands and strips	1.86c	8 5 0	.88c	4 0 0
Plain wire, base	2.08c	9 5 0	1.18c	5 7 6
Galvanized wire, base	2.36c	10 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	2.70c	12 0 0	1.27c	5 15 0
Tin plate, box 108 lbs.	$4.35	0 17 3	.....	.....

British ferromanganese $85 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d 4(‡3.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$17.01	3 7 6(a)	$13.86	210	$14.51	310	$24.19	63
Basic bessemer pig iron	16.38	3 5 0*	12.21	185	13.57	290	26.69 (b)	69.50
Furnace coke	4.41	0 17 6	7.92	120	5.15	110	7.30	19
Billets	27.72	5 10 0	28.38	430	20.59	440	37.06	96.50
Standard rails	1.86c	8 5 0	2.10c	700	2.31c	1100	2.30c	132
Merchant bars	1.94c	8 12 0	1.68c	560	1.16c	550	1.91c	110
Structural shapes	1.97c	8 15 0	1.65c	550	1.16c	550	1.87c	107.50
Plates, †¼-in. or 5 mm.	1.91c	8 10 0	2.10c	700	1.47c	700	2.21c	127
Sheets, black	2.36c	10 10 0§	2.55c	850‡	1.63c	775‡	2.51c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	2.93c	13 0 0	4.50c	1,500	3.15c	1,500	6.44c	370
Plain wire	2.08c	9 5 0	3.39c	1,130	2.31c	1,100	5.01c	173
Bands and strips	2.10c	9 7 0	1.95c	650	1.47c	700	2.21c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel. (a) del. Middlesbrough. (b) hematite

Bars

Bar Prices, Page 58

Pittsburgh—Merchant steel bar buying is noticeably limited, with many buyers well stocked and considerable uncertainty still resulting from the recent $2 a ton reduction to 1.80c base, Pittsburgh. Moves are reported under way to reclassify case-hardened forging steel bars, S.A.E. 1335, to the alloy base classification plus an alloy extra. Base prices on alloy steel bars are now 2.45c per pound on all basing points.

Cleveland—Not much price resistance has been encountered since the reduction for third quarter, but consumers' stocks are the chief obstacle to further buying. Orders during the week were of a miscellaneous character in less than carlots. While consumers see no special advantage in contracting, other than the assurance of obtaining material when needed, nevertheless many are closing with their regular sources. Tonnages named in these contracts by large consumers are considerably lower than they took in second quarter, while those from the general run of small customers show little change.

Chicago—New steel bar business continues light and specifications have shown little improvement. The outlook for fair business from the automotive industry is regarded as promising but requirements of farm implement manufacturers are expected to continue quiet.

Boston—Most consumers of commercial steel and alloy bars having covered through July and demand is light.

New York—Steel bar tonnage is light, with the market holding at the recently reduced price of 2.13c, New York.

Philadelphia—Commercial steel bar demand has rebounded slightly from the low level early this month, with the market now at the reduced figure of 1.80c, Pittsburgh, or 2.09c, Philadelphia.

Plates

Plate Prices, Page 58

Pittsburgh—Formal award was finally made last week on 640 tons of plates for 44 small pontoons for the Vicksburg, Miss., the order being placed with McClintic-Marshall Corp., Bethlehem, Pa. Aside from a few scattered projects, prospects in the plate market are not encouraging and the present price of 1.80c, Pittsburgh, has not been adequately tested.

Cleveland—Many plate fabricators were not able financially to stock up with material in June, and sellers look for a fairly steady flow of small spot orders from these. There are indications of more activity in oil refinery requirements. Some further buying by railroads is expected in the fall.

Chicago—Large projects requiring plates are sponsored mainly by government funds and although a fair volume of business in tanks and other products for private use is pending, awards recently have been light. Railroad plate needs for equipment repairs show no improvement. The pipe line market continues quiet.

Boston—Plate buying, except for some attractive volume for large steel pipe, is limited mostly to small miscellaneous lots. Large tank demand is less active.

New York—Plate business is better but light. Some quarterly contracting is noted but most buyers show little interest. Some fair oil refinery work is in prospect; the general run of tank buying is restricted.

Philadelphia—While plate making operations are low incoming business is slightly better. Navy vessels on which bids are to be opened Aug. 15, represent the largest outstanding work in sight, with speculation as to the prices which may be submitted, particularly in view of the President's ruling permitting bidders on federal work to cut code prices 15 per cent. Plates are now 1.90c, Coatesville, or 1.98½c, Philadelphia.

Contracts Placed

1000 tons, dredge hulls for Yuba, Calif., to Moore Dry Dock Co., San Francisco.

640 tons, 44 steel pontoons, Vicksburg, Miss., engineers, to McClintic-Marshall Corp., Bethlehem, Pa.

290 tons, 22-inch welded pipe, metropolitan water district, Los Angeles, to Consolidated Steel Corp., Los Angeles.

250 tons, welded pipe, Los Angeles, to Western Pipe & Steel Co., Los Angeles.

160 tons, three fishing vessels, to Isaacson Iron Works, Seattle; by Berg Shipbuilding Co., Seattle.

135 tons, oil storage tanks, City Point terminal, Hopewell, Va., to Hammond Iron Works, Warren, Pa.

130 tons, 300,000-gallon tank and tower, Merced, Calif., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

Contracts Pending

2000 tons, 52 to 63-inch water pipe for Tacoma, Wash., (alternate concrete); bids in.

175 tons, twelfth naval district, San Francisco; bids opened.

100 tons, standpipe, Paxton, Mass.; bids June 29.

Sheets

Sheet Prices, Page 58

New York—The Allegheny Steel Co., Brackenridge, Pa., has filed with the American Iron and Steel institute reductions of $1 a ton on hot-rolled annealed and hot rolled pickled in breakdown sheets. These prices are to become effective July 20. The new base price on No. 24 gage hot-rolled annealed sheets f.o.b. Pittsburgh is $2.40, and on No. 24 gage hot rolled pickled and breakdown, $2.80.

Steel buying is better than expected and fabrication is well in excess of current shipments. A substantial tonnage will be required for the New York down-town postoffice, which project will be up for bids soon.

Pittsburgh—Revised filings on all grades of electrical sheets incorporate a $3 a ton reduction, this having been announced last week. These prices are now quoted on a Pittsburgh base; Black sheets, 2.45c; hot-rolled No. 10, 1.85c; cold-rolled No. 20, 2.95c; and cold-rolled No. 10, 2.50c. No. 24 gage galvanized are 3.10c; and enameling sheets, 2.80c for No. 10, and 3.10c for 20 gage. Most sheet mills in Pittsburgh were slow in resuming last week.

Cleveland—Automobile manufacturers have placed some moderate size orders for immediate shipment at the new prices, principally for fill-in requirements. Sheet sellers believe buying will improve this month. The Cleveland sheet mill is operating around 50 per cent, and a nearby lake sheet mill serving the Michigan automobile territory has scheduled full operations for this week. Consumption in other leading lines is holding up fairly well, but the consumers' stocks are ample for some weeks. Sellers do not anticipate any further price changes this quarter.

Chicago—While a slight recovery is noted in sheet orders, the improvement has been insufficient to bring activity far above the low level attained early this month, and in view of heavy stocks in hands of larger consumers mills anticipate only a mild pickup in shipments during the next 30 days. Steady operations in the automotive industry help the outlook for better demand there, while operations of miscellaneous sheet consumers have resisted the usual seasonal decline experienced at this time to a certain degree.

Philadelphia—Sheet sellers look for some early buying by radio manufacture. There is virtually no contracting for this quarter. Prices con-

tinue at the reduced levels which went into effect early in the month.

Boston—Recent price reductions have failed to stimulate inquiry. This is due largely to fair stocks held by both the jobbing trade and industrial consumers.

Cincinnati — Sheet mills in this district are operating at 25 per cent. Important consumers are slow to make commitments.

Railroads

Track Material Prices, Page 59

Seaboard Air Line has entered the market for 100 all-steel 70-ton phosphate cars and the Mexican Railway Co. for 20 all-steel auto and 30 all-steel box cars, all of 40 tons capasity.

Rail mills are close to the end of their backlogs, the Pittsburgh mill having only a small tonnage remaining after its schedule of 5000 tons per week has been in effect for some time. Chicago railmakers will have their books clear by Aug. 31.

Several inquiries for blanket steel requirements for third quarter remain before the market and some small lots of repair material are placed from time to time. Louisville & Nashville has placed 3500 kegs of track spikes and about 750 kegs of track bolts for third quarter delivery. Norfolk Southern has placed an order for two gasoline rail cars with the American Car & Foundry Co., New York. The Pennsylvania has released a tonnage of tie plates, its July quota against an order formerly placed.

Bids opened July 12 by the New York Central on third quarter miscellaneous requirements showed no price irregularities on products covered by the steel code. Distribution of this material is expected in about a week.

Delaware river bridge commission, Philadelphia, is expected to open bids early in October on more than 2½ miles of track for its high speed line and about a month later on 42 cars.

Baltimore & Ohio has placed an order with the York Ice Machinery Corp., York, Pa., for air-conditioning equipment for 15 coaches and 16 Pullmans. It will be installed at the road's Mount Clare shops at Baltimore. This gives the Baltimore & Ohio 300 mechanically air-conditioned cars.

Car Orders Pending

Seaboard Air Line, 100 all-steel 70-ton phosphate cars.
Mexican Railway Co., 20 all steel auto and 30 all-steel box cars, all 40 tons capacity.

Pipe

Pipe Prices, Page 59

Pittsburgh—The most promising branch of the pipe market is in oil country goods for the time being, where inventories in the Southwest fields are not as excessive as in some other lines. Tubular mill operations in this district last week were barely at 20 per cent of capacity, this rate being supported chiefly by mill stock orders. Shipments have been completed by Spang-Chalfant & Co. on a small order for the Hickok Oil Co., Toledo, O., for a 40-mile gas line of 4½ inch pipe, the total order amounting to approximately 500 tons.

Chicago—Chicago continues a leading buyer of cast pipe, a new inquiry calling for 2228 tons of 4, 8, 12 and 16-inch material, bids July 20. Inquiries elsewhere generally call for only small lots and orders recently have been light. Activity has yet to attain the rate previously anticipated for this period and considerable business pending for three to six months has yet to be closed.

Boston—With 1400 tons of 48-inch steel pipe placed, a similar tonnage is expected to be up for bids within two weeks for Boston, Jamaica Plain district. Cast pipe demand is light and releases against contracts previously placed are slow, resulting in considerable accumulation of pipe in the local foundry's yards.

Cast Pipe Placed

1400 tons, 6 to 20-inch, Columbia, S. C., to United States Pipe & Foundry Co., Burlington, N. J.; J. B. McCrary Co., Atlanta, Ga., engineer.
400 tons, Humble, Tex., to American Cast Iron Pipe Co., Birmingham, Ala., Rheiner & Elder, San Antonio, Tex., general contractors.
148 tons, 4 and 6-inch, class 150, Santa Monica, Calif., to American Cast Pipe Co., Birmingham, Ala.

Steel Pipe Placed

1400 tons, 48-inch, water line, Brookline avenue, Boston, to Walsh-Holyoke Steam Boiler Works, Holyoke, Mass.

Cast Pipe Pending

2228 tons, 4, 8, 12 and 16-inch, Chicago; bids July 20 to commissioner of public works.
Unstated tonnage, 8881 feet of 8-inch and 1530 feet of 6-inch, Marathon, Wis.; bids in.

Steel Pipe Pending

1450 tons, 48-inch, water line, Jamaica Plain district, Boston; bids in.

Strip Steel

Strip Prices, Page 59

Pittsburgh—Only orders of small size have tested the lower price of 1.85c, base, Pittsburgh, on hot-rolled strip steel and 2.60c base, Pittsburgh or Cleveland, for cold-rolled strip steel. Some strip producers at Pittsburgh were unable to reschedule operations after the July 4 weekly holiday until late last week and then only with minor backlogs.

Cleveland — Current orders for strip are limited to occasional carload lots for prompt shipment to automobile manufacturers, with no contracting for third quarter. Consumers generally are well supplied with material taken in June and recent price reductions for third quarter has further subdued interest in the market. Fender stock, a cold-rolled strip commodity has been reduced $1 to $4 a ton, to 3.15c, base, Cleveland and Pittsburgh, for No. 16 gage and heavier, and to 3.30c for No. 17 and lighter.

Chicago—Recovery from the low level to which strip demand receded at the opening of this month so far has been slight. While a number of consumers have adequate stocks to accommodate their needs for several weeks additional, sustained operations in the automotive and several other industries aids the outlook for a resumption of buying by the middle of August. Hot-rolled strip now is 1.95c, Chicago, with cold-rolled strip 2.60c, Pittsburgh-Cleveland.

Boston — Prices on several cold strip specialties based at Worcester, Mass., have been revised. Buying is light in both hot and cold-rolled, although some fill-in business has been done at 2.80c, Worcester.

New York—Steel strip is in small demand but consumption exceeds shipments. Prices are unchanged at the recently reduced levels.

Philadelphia—Strip sellers report the market fully as dull as expected. Hot strip is holding at the newly reduced level of 2.14c, Philadelphia, and cold strip at 2.89c, Philadelphia.

Wire

Wire Prices, Page 59

Pittsburgh—Releases against third quarter wire products contracts have been negligible. The market has shown no price change, however, and bases at Pittsburgh and Cleveland, in carload lots are still $2.60 per keg for nails, 2.30c per pound on plain wire and $63 per base column for

fencing. Operating schedules resumed slowly last week, and now are not up to a 25 per cent average.

Cleveland—Wire and wire products prices remain unchanged for third quarter, so far unaffected by reductions in most other classifications of finished steel. The disposition of buyers to wait is particularly noticeable in wire and few orders were booked during the week. Stocks in consumers' hands weigh against any revival of interest in the market for several weeks.

Chicago—Wire demand has recovered only slightly from the low level attained immediately following the completion of shipments against second quarter contracts. Consumption of manufacturers' wire is seasonally active and has been maintained better than had been anticipated in some industries, particularly the automotive. Consumers are slow to place new contracts although there are indications that recent price reductions in other steel products will not spread to wire. Slow demand persists in agricultural districts.

Boston—Demand for plain wire, specialties and wire products is sluggish, producers expecting a pick-up next month. Except in a few instances, consumers of wire, did not stock heavily at the close of last quarter.

Tin Plate

Tin Plate Prices, Page 58

Pittsburgh—When the tin plate industry resumed operations, generally on July 9, after a week's holiday, the average of operating schedules was between 45 and 50 per cent. However, new buying is not supporting this rate, though prospects for the tomato and corn packs are favorable. The market is unchanged at $5.25, per base box for standard coke base tin plate, with tin mill sizes of black sheets 2.75c, and a recent initial filing of $4 per base box.

New York—Shipments are far lighter than a month ago when canners feared labor troubles at steel mills might interfere with deliveries. A fair tonnage of tin plate still is being exported, particularly to the Orient.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet, Prices, Page 59

Contracting for bolts, nuts and rivets for third quarter is practically completed but specifications are light because of large stocks in consumers' and jobbers' hands. Farm implement builders have decreased production and this is reflected in smaller orders for material. Railroad requirements are holding up better than those of other consumers.

Manufacturers of some specialties have already taken advantage of the government's order permitting them to cut their prices as much as 15 per cent in bidding on government work, though the concessions so far offered have been closer to 10 per cent.

Large rivets have been reduced $2 per ton to a base of 2.90c, Cleveland and Pittsburgh, and 3.00c, Chicago. Previously an advance of $5 a ton was announced for third quarter. Small rivets remain unchanged at 70 and 5 off list, and bolts and nuts at 70 off.

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The heavy-duty construction of this 35-40 ton crane includes a one-piece cast steel rotating bed, rotating and travel clutch bevel gears and spur gears cut from the solid; alloy steel main shafts; three travel speeds.

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District Offices: New York, Philadelphia, Chicago, Cleveland

INDUSTRIAL BROWNHOIST

Shapes

Structural Shape Prices, Page 58

Pittsburgh — The Pennsylvania state highway department, Harrisburg, is taking bids July 27 on five bridges requiring 900 tons. The long pending Ford Motor Co. steel mill building was awarded last week to McClintic-Marshall Corp., a total of 3900 tons being involved in two contracts. Structural inquiries are diminishing. Prices on plain structural steel are now based on 1.80c, Pittsburgh; and steel sheet piling on 2.15c, Pittsburgh.

Cleveland—Railroad bridge requirements appear to be the most promising for structural steel tonnage in this district. Erie railroad is preparing plans for one structure that will require around 1000 tons, and for several others, while Chesapeake & Ohio railroad also is contemplating some additional bridges. Public or private work does not offer much encouragement at present.

Carnegie Steel Co., Pittsburgh, has been awarded 350 tons of shapes for a plant addition for the National Forge & Ordnance Co., Irvine, Pa.

Bids are being taken on 500 tons Fisher Body Co.'s plant here.

Chicago—Except for awards for three large public projects, the structural market is inactive. For the Ft. Peck, Mont., dam, 15,000 to 16,000 tons of piling have been divided between two producers. Other large awards include 3900 tons, in addition to 380 tons of cable and 400 tons of reinforcing bars, for the Bettendorf, Iowa, bridge, and 2107 tons for two bridges in the Sag district near Chicago. Inquiries have dwindled and fabricators have few jobs of consequence to figure.

Boston—After a delay of several months, the superstructure for the vertical lift railway bridge over the Cape Cod canal, Buzzards Bay, Mass., is again out for bids July 20 to the United States engineer, Boston. This project takes close to 5000 tons.

New York—Bids are in on an increased volume of structural projects in the New York district, largely New York city public work. Awards are still light in this district, but include close to 700 tons for a building at Yale university, New Haven.

Bids are to be taken shortly on 25,000 to 30,000 tons of shapes for the superstructure of the down-town postoffice, New York.

Philadelphia—Fabricating shops operations continue fairly well sustained by releases against identified projects for which orders were placed prior to the middle of June. New construction is comprised chiefly of miscellaneous state bridge work. The new price of 1.90c, Bethlehem, or 2.00½c, Philadelphia, is now in effect on shapes.

Washington—Approximately 1175 tons have been placed by the department of agriculture for 162 lookout

Shape Awards Compared

	Tons
Week ended July 14	33,023
Week ended July 7	12,430
Week ended June 30	17,385
This week in 1933	5,706
Weekly average for 1933	15,413
Weekly average, 1934	17,557
Weekly average, June	18,040
Total to date, 1933	433,982
Total to date, 1934	509,170

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towers, with McClintic-Marshall Corp., Bethlehem, Pa.

Shape Contracts Placed

15,000 to 16,000 tons, piling, Ft. Peck, Mont., dam, to Illinois Steel Co., Chicago, and Jones & Laughlin Steel Corp., Pittsburgh; through Frazier-Davis & Co. and G. L. Tarlton, St. Louis.

3900 tons, two Ford Motor Co. mill buildings, Dearborn, Mich., comprised of one 1400-ton unit and one 2500-ton unit, to McClintic-Marshall Corp., Bethlehem, Pa. The 1400-ton unit previously incorrectly reported to Fort Pitt Bridge Works.

3900 tons, in addition to 380 tons of cable, 400 tons of reinforcing bars, Mississippi river toll bridge, Bettendorf, Iowa, to Moline, Ill., to McClintic-Marshall Corp., Bethlehem, Pa.

2107 tons, two state bridges, Lemont, Ill.; 1107 tons to Mississippi Valley Structural Steel Co., Decatur, Ill., 1000 tons to McClintic-Marshall Corp., Bethlehem, Pa.

1580 tons, Deception Pass., Wash., state bridges, to Wallace Bridge & Structural Steel Co., Seattle; Puget Construction Co., Seattle, general contractor.

1175 tons, 162 lookout towers for the department of agriculture, Washington, to McClintic-Marshall Corp., Bethlehem, Pa.

775 tons, bridge, Sault Ste. Marie, Mich., to Lackawanna Steel Construction Corp., Buffalo.

750 tons, state highway bridges, various locations in Iowa, to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

550 tons, highway bridge, El Dorado, Ark., to Arkansas Foundry Co., Little Rock, Ark.

400 tons, bridge, Littleton, N. H.-Walpole, Vt., to Phoenix Bridge Co., Phoenixville, Pa.

350 tons, oil derricks for Steel Oil Derrick Co., to McClintic-Marshall Corp., Bethlehem, Pa.

350 tons, plant addition, National Forge & Ordnance Co., Irvine, Pa., to Carnegie Steel Co., Pittsburgh; through Rogers Structural Steel Co., Corry, Pa.

350 tons, state bridges, Rocky Ford, Colo., to American Bridge Co., Pittsburgh.

275 tons, repairs to El Rodeo and Beverly Vista schools, Beverly Hills, Calif., to Consolidated Steel Corp., Los Angeles.

260 tons, Alhambra, Wash., bridge, Los Angeles county, California, to Consolidated Steel Corp., Los Angeles.

260 tons, highway bridge, Anderson county, Texas, to Austin Bros., Dallas, Tex.

225 tons, bridges on route 29, section 11, Hunterdon county, New Jersey, to American Bridge Co., Pittsburgh.

200 tons, church building, Lewiston, Me., to Lyons Iron Works, Manchester, N. H.

200 tons, State street school, Los Angeles, to Minneapolis-Moline Power Implement Co., Minneapolis.

200 tons, addition, high school, New Bedford, Mass., to John E. Cox Co., Fall River, Mass.; Matthew Cummings Co., Boston, general contractor.

175 tons, highway bridge, intra-coastal waterway, United States engineer, Charleston, S. C., to Virginia Bridge & Iron Co., Roanoke, Va.; Tidewater Construction Co., Norfolk, Va., general contractor. Hall-Hodges Co., Norfolk, awarded 40 tons of reinforcing bars.

140 tons, highway bridge, Sevier county, Arkansas, to Jones & Laughlin Steel Corp., Pittsburgh.

135 tons, Nevada street school, Newton, Mass., to West End Iron Works, Cambridge, Mass.

130 tons, piling, government breakwall at Ashtabula, O., to Carnegie Steel Co., Pittsburgh.

120 tons, bridge, Fillmore, N. Y., to American Bridge Co., Pittsburgh.

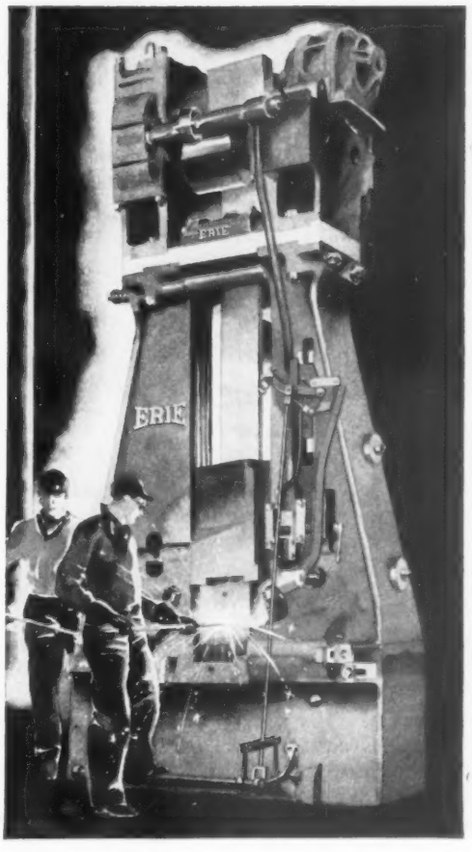
110 tons, steel joists, school at Palm avenue and 17th street, Los Angeles, to Soule Steel Co., Los Angeles.

106 tons, shapes and bars, Logan school, Washington, 66 tons of shapes to Dietrich Bros., Baltimore; 40 tons of bars to Hudson Supply & Equipment Co., Washington; John W. Hunt Co., Washington, general contractor.

100 tons or more, shapes and bars, addition to school, East Providence, R. I., shapes to Tower Iron Works, Providence; bars to Fred Swanson Inc., Providence; Tucker Construction Co., Providence, general contractor.

100 tons, bridge, highway 100, over M.

Those Old ERIES Were Good Buys



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& O. railroad, Henderson and Chester counties, Tennessee, to Ingalls Iron Works Co., Birmingham, Ala.; Forcum-James, Dyersburg, Tenn., general contractor.

Shape Contracts Pending

5500 tons, superstructure, parcel post building, Boston; specifications out within month.

5000 tons, superstructure, including operating machinery, vertical lift railway bridge, Cape Cod canal, Buzzards Bay, Mass.; bids July 20 to United States engineer, Boston.

1100 tons, West 205th street viaduct, New York; bids readvertised.

850 to 1500 tons, wharf and transit shed, Stockton, Calif.; bids July 17.

850 tons, state bridge, route 68, section 9, Blairstown, Pa.; bids July 13. This project was previously noted as involving a smaller tonnage.

700 tons, seven hangars, naval base, San Diego, Calif.; bids July 11.

600 tons, draw span, Wellington bridge, Mystic river, Medford-Somerville, Mass.

500 tons, three state highway bridges, Wisconsin.

500 tons, stamping room addition for Fisher Body Co., Cleveland.

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350 tons, state bridge, Brooklawn, N. J.; bids July 23.

350 tons, state highway bridge, Westville, N. J.

300 tons, addition to Memorial hospital, Boston.

240 tons, rigid frame steel girder bridge for Lower Merion township, Philadelphia; Phoenix Bridge Co., Phoenixville, Pa., low at $18,864.

225 tons, reconstruction in part of bridge over the Monongahela river, Monongahela City, Pa., for Pennsylvania state highway department; bids July 27.

225 tons, state bridge, Jordan, Minn.

216 tons, 5-span arch bridge, Snake Spring township, Bedford county, Pennsylvania; bids to state department of highways, Harrisburg, Pa., July 27.

180 tons, bridge, Cascade creek, Yellowstone National Park, Wyoming; bids soon.

170 tons, state bridges, Vermont; bids in.

162 tons, plate girder bridge, Broad Top and Hopewell townships, Bedford county, Pennsylvania; bids to state department of highways, Harrisburg, Pa., July 27.

117 tons, through truss bridge, Sugar Loaf township, Columbia county, Pennsylvania; bids to state department of highways, Harrisburg, Pa., July 27.

106 tons, state bridge, Kern county, California; bids July 25.

100 tons, widening of bridge, Lower Merion township, Philadelphia and Montgomery counties, Pennsylvania; bids to state department of highways, Harrisburg, Pa., July 27.

Cold Finished

Cold Finished Prices, Page 59

Pittsburgh—While early July saw no noteworthy buying in cold-finished carbon steel bars, developments later in the month are expected to bring some automotive orders. The market holds steady at 2.10c base, Pittsburgh, for cold-finished carbon steel bars and 2.95c, Pittsburgh, for cold-drawn alloy bars. Turned and ground shafting is now quoted on the cold-drawn carbon bar base of 2.10c, Pittsburgh, plus extras for shafting size.

Semifinished

Semifinished Prices, Page 59

Semifinished steel prices now are on the following Pittsburgh bases: Billets, $27; forging quality billets, $32; sheet bars, $28; wire rods, $38; and alloy billets, $49. Skelp is 1.70c; and tube rounds, 1.80c. Non-integrated sheet, strip and tin plate rollers are taking less tonnage than a month ago.

Reinforcing

Reinforcing Bar Prices, Page 59

Pittsburgh—Inquiry is limited to moderate size lots for state work. The market remains 2.05c, Pittsburgh, for cut lengths; or 1.85c, Pittsburgh, to jobbers. A revision has been made in the $2 a ton extra for specification of new billet bars where including random lengths.

Cleveland—While prices of reinforcing material have not been reduced along with other finished steel products, the market is practically devoid of a test. A few hundred tons are pending for state road work otherwise only occasional calls are received for minor lots.

Chicago—Illinois has placed several hundred tons additional for road work, with some tonnage on which bids were closed several weeks ago remaining to be awarded for this work. While orders have been placed for structural shapes for two bridges in the Sag district here, the awarding of about 450 tons of reinforcing bars still is awaited. Bids close July 26 on 350 tons for section 10 of the Chicago sanitary district, previous bids on this work having been rejected. Included among other orders is 300 tons for construction in the Chicago stock yards.

Boston—Reinforcing steel bar awards total slightly more than 600 tons, including a bridge at Dover, N. H., and a sewage section in Boston. New inquiry is light.

New York — Reinforcing steel awards are light except for highway mesh, close to 650 tons of the latter having been placed by contractors for New York state roads. Pending requirements for billet bars are heavier. The 3000-tons required for the New York Central railroad west-side development are expected to be awarded in five sections.

Philadelphia—Featuring reinforcing bar demand are 475 tons for a state project in Bedford county, Pennsylvania, bids July 27. Billet reinforcing bars are unchanged, with cut lengths 2.05c, Pittsburgh, or 2.34c, delivered Philadelphia.

Concrete Awards Compared

	Tons
Week ended July 14	3,323
Week ended July 7	2,422
Week ended June 30	2,025
This week in 1933	740
Weekly average for 1933	3,771
Weekly average, 1934	4,647
Weekly average, June	4,816
Total to date, 1933	89,922
Total to date, 1934	134,776

Reinforcing Steel Awards

435 tons, mesh, Sunrise highway extension, part 4, highway 8444, Suffolk county, New York, to American Steel & Wire Co., New York; Mill Basin Asphalt Corp., Brooklyn, general contractor.

400 tons, bridge, Bettendorf, Iowa, to Moline, Ill., to Kalman Steel Corp., Bethlehem, Pa.

320 tons, Bellamy river bridge, Dover, N. H., to Concrete Steel Co., Boston; Warren Bros. Roads Construction Co., Cambridge, Mass., general contractors.

300 tons, cattle runs, Chicago stock yards, to Calumet Steel Co., Chicago.

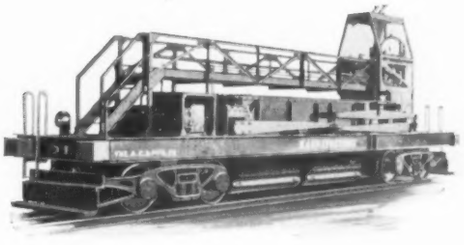
300 tons, Illinois road work, to Calumet Steel Co., Chicago.

265 tons, section 13, Stoney Brook sewer, Boston, to Concrete Steel Co., Boston.

170 tons, mesh, Sunrise highway extension, part 5, highway 8445, Suffolk county, New York, to Pittsburgh Steel Co., Pittsburgh; William F. McDonald Construction Co., Flushing, N. Y., general contractor.

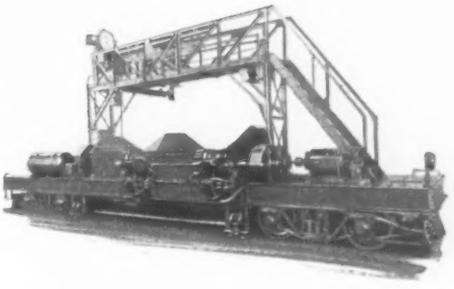
170 tons, Bayside high school, Queens,

ATLAS SCALE CARS



20 *Ton — Double Compartment Scale Car. Journals provided with self aligning anti-friction bearings. Equipped with Atlas Indicator and Recorder.*

20 *Ton Two Compartment Scale Car with Orr Bin Gate Operating Mechanism. Anti-friction bearings. Equipped with Atlas Indicating and Recording Mechanism.*



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N. Y., to Carroll, McCreary Co. Inc., Long Island City, N. Y.; through Royal-Rice Co. Inc.

162 tons, Deception Pass., Wash., state bridges, to Pioneer Sand & Gravel Co., Seattle; Puget Construction Co., Seattle, general contractor.

150 tons, Alhambra Wash bridge, Los Angeles county, California, to unnamed interest.

126 tons, school at Palm avenue and Seventeenth street, Huntington Beach, Calif., to unnamed interest.

125 tons, building, state hospital, Tewksbury, Mass., to Kalman Steel Corp., Bethlehem, Pa.

100 tons, Calaveras aerator, Hetch Hetchy project, San Francisco, to unnamed interest.

100 tons, postoffice, Alhambra, Calif., to Truscon Steel Co., Los Angeles.

100 tons, building for Long Beach Junior College, Long Beach, Calif., to unnamed interest.

100 tons, alterations to Jackson school, Pasadena, Calif., to unnamed interest.

Reinforcing Steel Pending

1500 tons, wharf and transit shed, Stockton, Calif.; bids July 17.

473 tons, 5-span open spandrel-type reinforced concrete arch bridge, Snake Spring township, Bedford county, Pennsylvania; bids to state department of highways, Harrisburg, Pa., July 27.

350 tons, section 10, Chicago sanitary district; Bids July 26.

157 tons, state highway work, Kern county, California; bids July 25.

139 tons, storm drain, San Bernardino county, California, for state; bids July 19.

100 tons, mausoleum, Calvary cemetery, Los Angeles; bids being taken.

100 tons, Verdugo Wash conduit, Los Angeles county, California; bids July 23.

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GARAGE IN CONNECTION

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DETROIT

Iron Ore

Iron Ore Prices, Page 60

Cleveland—Lake Erie dock balances of iron ore July 1 were considerably lighter than on the comparable date last year, although shipments this year have greatly exceeded those in 1933. Receipts at Lake Erie ports in June totaled 3,117,649 tons, and shipments from those ports, 2,426,860 tons. For the season to July 1 at Lake Erie ports the Lake Superior Iron Ore association reports tonnages as follows:

Port	Receipts	Shipments	Dock bal. July 1
Buffalo	464,298	1,577	1,207
Erie	307,175	310,419	121,163
Conneaut	958,612	1,271,034	1,537,506
Ashtabula	605,086	780,740	1,322,837
Fairport	413,717	417,174	387,403
Cleveland	1,092,127	777,217	628,514
Lorain	346,781	220,133	12,527
Huron	141,170	156,693	321,796
Toledo	256,274	172,274	10,043
Total	4,585,240	4,107,531	4,342,996
Year ago	1,343,276	1,322,891	4,788,748

Receipts for the season to July 1 tonnages as follows:

	Receipts
Detroit	203,715
Indiana Harbor	460,285
Gary	481,872
South Chicago	591,932
Sault Ste. Marie, Ont.	11,223
Hamilton, Ont.	84,678
Total	1,833,705
Year ago	724,120

Five Great Lakes vessels in the iron ore trade have been laid up temporarily reducing the active number to 149 as of July 15. A year ago only 116 vessels were engaged.

Ferroalloys

Feroalloy Prices, Page 60

Ferromangenese specifications show a slight improvement. The market continues at $85, duty paid, Atlantic and Gulf ports. Domestic spiegeleisen, 19 to 21 per cent, is holding at $26, furnace, on quantities up to 50 tons.

Pig Iron

Pig Iron Prices, Page 60

Pittsburgh—Few third quarter pig iron contracts have been negotiated at the unchanged price schedule naming $18.50, local base, on foundry grades, $18 on basic, and $19.50 per ton for bessemer. Since July 1, both shipments and orders have declined.

Cleveland—Pig iron prices are steady at the $1 a ton advance for third quarter, with No. 2 foundry iron and malleable $18.50, base, Cleveland, Toledo, Detroit and Erie, Pa. Furnaces generally are operating on slackened blast. Inquiries are lacking, and consumers' stocks appear to preclude any substantial buying until some time in August. Final compilations show pig iron shipments in the first half of the year nearly 300 per cent above those in the comparable period last year.

Chicago—Pig iron orders consist principally of small lots from consumers who failed to anticipate current needs during the past quarter. Shipments also are light and no substantial improvement in demand is in prospect until August or early September. Automotive foundries are maintaining operations better than had been anticipated and some steel foundries still are experiencing fairly good business from railroads and equipment builders. The market continues $18.50, furnace, for No. 2 foundry and malleable.

Boston—The foundry melt is lower, with most consumers covered on pig iron for a good part of third quarter needs.

New York—Movement of pig iron remains at low ebb, following heavy shipments last month. Moreover, while the melt is a little better than a week ago, it is still below the June rate. Prices are unchanged.

Philadelphia—Pig iron demand is listless, consumers being well covered by releases in the last quarter. Trade looks for prices to hold, and not at this time to follow the trend in certain other iron and steel products. One eastern Pennsylvania merchant furnace is scheduled to blow out before the end of this month.

Buffalo—Demand for small lots of pig iron is improving but large tonnage inquiry is completely lacking. Shipments since July 1 have been small except for stocks of district manufacturers at points reached by water.

Cincinnati—The market continues dull, with bookings limited to carload lots. Many melters have adequate supplies, shipped during the second quarter, to meet needs to Sept. 1.

St. Louis—The pig iron market is quieter than it has been in several months. On the absence of contracts for heavy tonnages, producers are content with spot business. The melt picked up some during this week, following a sharp drop the preceding week because of the holiday and extreme heat. The latter condition continues.

Birmingham, Ala.—Purchasing is in small lots, with aggregate under the production. Schedules call for three blast furnaces to be blown out this week. Production of iron during first half of year in Alabama amounted to 783,906 tons against 900,170 tons for all of 1933. Labor differences at pipe and stove foundries have been settled.

Toronto, Ont.—Merchant pig iron sales are holding at a steady level in the Canadian markets. While no large contracts have been placed, local blast furnace representatives

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state that demand for spot delivery is holding. Three blast furnaces are operating with production slightly under 40,000 tons per month and the bulk of output in basic iron.

Scrap

Scrap Prices, Page 61

Pittsburgh—Last week the Baltimore & Ohio railroad sold approximately 4000 tons of No. 1 heavy melting steel and scrap rails to a district mill, realizing around $12 a ton. Among railroad lists to be closed on this week is the Norfolk & Western offering July 19 including 1500 tons of locomotive plates and 1000 tons of underframes.

Cleveland—Some blast furnace scrap and miscellaneous grades are moving in small lots but the situation is dull. Holders of scrap are unwilling to sell at the present market. Prices are unchanged and have not been tested.

Chicago—Unsupported by consumer buying, scrap prices have sagged 25 cents to $1 a ton below recent levels. Heavy melting steel now is $9.25 to $9.75, the lower range reflecting figures at which dealers would accept orders. Previous mill purchases were made at $10. While recent railroad lists have been larger, offerings elsewhere are moderate.

Boston—Domestic demand for scrap is light with prices on several grades inclined to be weak, including heavy melting steel and malleable. Buying for cargo of melting steel grades for Japan is being done against an old order.

New York—Dullness marks the scrap market with light shipments to eastern mills. Buying for export against orders continues and prices are unchanged on the more active grades.

Philadelphia—Heavy melting steel has again been reduced, No. 1 grade now holding at $10 to $10.50 and No. 2 at $8.50 to $9, delivered. These prices have been established on relatively small scattered orders. A reduction has also been made in dealers' buying prices for No. 2 steel for export, the market now being $8.25, wharf, a drop of 25 cents. Most buying for export at the moment is against old orders.

Buffalo—Anxiety of some dealers to dispose of scrap is weakening the market. Some small lot sales have been made of various grades at considerably reduced prices. Larger dealers, however, insist tonnage can not be bought at figures which have prevailed in recent deals and are holding for substantially higher prices.

Detroit—Bidding on several motor car lists the last week brought prices generally within less than 10 cents per ton below prices on the same lists a month ago. Local steelworks consumption of scrap continues at a high rate.

Cincinnati—The iron and steel scrap market is quotably unchanged although early indications are that bidding on railroad scrap is lower than a month ago. Some mills have ordered shipments suspended, others taking material on contract and none entering new tonnage commitments. Dealer scrap is being held rather closely.

St. Louis—No buying of steel and iron scrap has been done in this district since an important interest took some tonnage several weeks ago. Country dealers are offering little tonnage at present prices. The market is purely nominal.

Birmingham—Quiet prevails in steel and iron scrap with prices unchanged.

Toronto, Ont.—While demand is comparatively dull in iron and steel scrap, dealers report good movement of some grades. Most demand is for iron grades. Malleable is moving slowly and most other lines are dull.

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Warehouse

Warehouse Prices, Page 62

Pittsburgh—Warehouses here reduced prices on sheets last week, following by the same amount recent mill price cuts. No. 10 blue annealed, No. 24 black, No. 24 galvanized, and hoops and bands are all now quoted lower by Pittsburgh jobbers, following reductions in bars, plates and shapes two weeks ago. No change has been made in cold-drawn bars at 3.45c.

Cleveland—Warehouse business has slackened considerably. Prices were adjusted downward a week ago in accordance with new mill prices, and there has been some discussion of a revision in warehouse cutting extras. The main feature of a tentative schedule is a reduction in per piece cutting on larger sections.

Chicago—While experiencing some decrease in sales, warehouse activity is slightly better than expected.

Hot and cold-rolled alloy bars have been reduced 15 to 20 cents per 100 pounds, with cold-finished carbon steel bars unchanged.

Boston—Warehouse volume continues light. Reductions in prices have brought in little additional business.

New York—Further reductions in warehouse prices have followed changes made July 3. Buying is light, most jobbers noting little activity regardless of lower prices. Galvanized sheets are now 4.50c with lower prices also effective on black, lead coated long ternes, Armco galvanized, No. 24 black and No. 10 blue annealed. Cold finished sheets from warehouse are unchanged.

Philadelphia—As expected, jobbing demand is below the June rate, although some jobbers find the decline is not as sharp as they expected. It is estimated that business during first half was 75 to 80 per cent greater than in the corresponding period of 1933.

Baltimore—Warehouse prices have been advanced $2 to $4 a ton here, although on some products, including cold-drawn steel, quotations remain unchanged. Plates, shapes and bars are off $2 a ton to 2.90c; No. 10 blue annealed sheets $3 a ton to 3.05c; bands $3 to 3.15c; No. 24 galvanized sheets $3 to 4.21c; and No. 24 gage light black sheets $4 to 3.56c. Buying reflects seasonal dullness.

Detroit — Reduced schedule of warehouse steel prices is now being observed, with reductions of 10 cents per 100 pounds on bars, 5 cents on plates and shapes and 5 to 20 cents on various grades of sheets. Billets have been reduced for shipment out of warehouse, although no change has been made on cold-finished carbon steel, bolts and nuts, wire and wire products, and cold-rolled strip steel. Shipments have been improving since the dull week over July 4.

Cincinnati—Demand for steel from warehouse is close to the June level, the seasonal drop being less than anticipated.

Metallurgical Coke

Coke Prices, Page 59

The market remains quotably unchanged on beehive coke, both foundry and furnace grades. On a Connellsville oven basis, furnace coke is quoted $3.85 for prompt shipment and furnace coke $3.60 for contracts. Foundry coke is $4.60 per ton and premium foundry coke $5.35 per ton. There is practically no interest in the Pittsburgh market on the part of metallurgical coke users.

Shipments of by-product foundry coke at Chicago in July are 10 to 15 per cent below the corresponding period of June. Prices are unchanged at $8.50, ovens, for outside delivery and $9.25, delivered, Chicago. Birmingham cokemakers are producing steadily and the price is steady at $6, ovens.

Nonferrous Metals

Nonferrous Metal Prices, Page 60, 61

New York—Nonferrous metal prices were fairly steady last week with the exception of easiness which developed in zinc. Consumers came into the market for relatively little metal Demand for lead was outstanding.

Copper—Domestic price levels held on the basis of 9.00c, Connecticut. Sales amounted to only a few hundred tons for the entire week but this was not unexpected in view of the heavy coverage prior to the advance to 9.00c. The export market for copper broke sharply due to the critical situation in Germany but later recovered somewhat. Weakness in the export market resulted in lower prices for scrap here but secondary ingot went no lower.

Lead—Demand for lead was less active than in the preceding week but was in the larger volume than for any other nonferrous metal. Most of the buying was for July and August delivery. Tone of the market remained steady on the basis of 3.60c, East St. Louis and 3.75c, New York.

Zinc—Despite an improvement in the industry's statistical position and sharp curtailment of ore in the Tri-State district, weakness developed in prices. By the end of the week prime western metal was down $1 a ton to 4.30c, East St. Louis. Most sellers were holding to higher levels. The weaker market brought out little new business.

Tin—Spot and July Straits metal held close to 51.80c to 81.85c through the week. Fair business was reported on some days but the total volume was small. Predictions in the trade are to the effect that surplus world supplies will climb during July and August. Decline in shipments to the United States during the first half of 1934 is attributed in

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some measure to the substitution of other metals.

Antimony—Market was somewhat firmer but little business was done.

Aluminum—No further change was reported in secondary metal, standard No. 12 holding at 14.00c. Virgin ingot was quiet.

Pacific Coast

Pacific Coast Prices, Page 59, 60, 62

San Francisco—*(By Air Mail)*—Effective July 12 prices on sheets, shapes, plates and bars were reduced $1 to $4 a ton. New prices are: Hot rolled No. 10 sheets, 2.45c; hot rolled annealed No. 24 sheets, 3.05c; No. 24 galvanized, 3.70c; plates and shapes 2.35c; mild steel bars 2.35c; reinforcing bars, 2.35c.

Unnamed interests took 150 tons of reinforcing bars for the Alhambra wash bridge, Los Angeles, and 126 tons for a school at Huntington Beach, Calif. Truscon Steel Co. booked 100 tons for a postoffice at Alhambra, Calif. Pending business exceeds 36,000 tons. New inquiries include 1500 tons for a wharf and transit shed at Stockton, Calif.

Western Pipe & Steel Co. booked 250 tons of plates for a pipe line for Los Angeles, and the Consolidated Steel Corp. took 290 tons for the Los Angeles metropolitan water district. Pittsburgh-Des Moines Steel Co. secured 130 tons for a tank and tower at Merced, Calif. Bids have been taken on 175 tons for the twelfth naval district, San Francisco.

Consolidated Steel Corp. booked 275 tons of shapes for repairs to two schools in Beverly Hills, Calif., and 260 tons for the Alhambra wash bridge, Los Angeles. Minneapolis-Moline Power Implement Co. secured 200 tons for the State street school, Los Angeles. Bids will be opened July 17 for 1500 tons for a wharf and transit shed at Stockton, Calif. The naval base at San Diego, Calif., will open bids this week on 700 tons for seven hangars.

American Cast Iron Pipe Co. took 148 tons for Santa Monica Calif. Phoenix, Ariz., is expected in the market soon for fifteen miles of 2 to 12-inch pipe.

Bonneville Bids Opened

Seattle—Opening of bids by army engineer, Portland, for the Bonneville powerhouse substructure and dam lock was the highlight of the Pacific Northwest and steel market this week. The low bid of $3,895,592 was submitted jointly by General Construction Co., Seattle, and J. F. Shea, Portland, Oreg. This unit involves 12,128 tons of shapes and includes concrete work for the intake, substructure for six power units, fishway excavation and removal of cofferdams. The powerhouse will be 550 x 300 feet.

The week's awards included 1580 tons of shapes for the two state Deception Pass, Wash., spans to Wallace Bridge & Structural Steel Co., Seattle. Pioneer Sand & Gravel Co., Seattle, will supply 162 tons of reinforcing and Washington Iron Works 33 tons of castings for the same job. Isaacson Iron Works, Seattle, is supplying 160 tons of plates for three all-welded fishing vessels being built by the Berg Shipbuilding Co., Seattle.

Columbian Steel Co. will supply 200 tons of No. 2 galvanized wire for winding 15 miles of 14, 16 and 18-inch wood pipe for Snohomish, Wash., awarded to Federal Pipe & Tank Co., Seattle. Tacoma has opened bids (July 10) for 52 to 63-inch pipe, involving 2000 tons of plates if steel is accepted. In two state road jobs, bids opened July 10, 120 tons of reinforcing are involved. Seattle City Light Co. is to ask bids soon for the $1,500,000 Diablo powerhouse and $304,000 addition to its local headquarters. The same utility is in the market for insulators and a 50,000-gallon steel tank.

Local steel mills are out of the scrap market and there is practically no local activity.

Steel in Europe

Foreign Steel Prices, Page 62

London—*(By Radio)*—British iron and steel markets are seasonally quiet. Building construction continues fairly brisk. Sheets have made a slight improvement and tin plate sales are good. The export trade shows some gain, but low prices are met in competition. The proposed plans of the government to build more ships and scrap some vessels may stimulate shipyard activity.

Continental markets are experiencing some demand for exports to the Near East and Far East. Germany is making fair sales of steel bars.

Coke By-Products

Coke By-Product Prices, Page 59

New York—Distillate prices are firm and unchanged. Production is smaller and there is little material available for spot buying. Shipments of naphthalene are less active, largely for spot needs. An announcement of sulphate of ammonia prices for last half of the year is expected this week.

Quicksilver

New York—Quicksilver continues quiet here, with small lots unchanged at $75.00 a virgin flask of 76 pounds, and round lots down to $74.50 a flask.

Adjust Stainless Steel Royalties

CHEMICAL FOUNDATION INC., New York, has reached an agreement with licensees to the production of stainless steel under the Strauss patents regarding increases in royalty.

As reported in STEEL, July 2, page 12, the Foundation had notified licensees that effective July 1 the royalty on finished and semifinished products would be advanced from 1 per cent to 5 per cent of the net selling price, and in the case of castings the 1 per cent would be replaced with a royalty of 2 cents per pound on the net weight of finished form castings molded in sand. The payment of royalty also was to be imposed on converters of stainless material.

After conference with two committees appointed by the licensees, one representing the producers of ingots and the other producers of castings, the Foundation accepted their representations as to the untimeliness of the contemplated advance in royalty rate and the disadvantage to them in having such royalty placed upon the converters and agreed to a new basis for the computation of royalties.

The Foundation agreed to suspend the imposed royalty increases for six months and to substitute a more favorable rate for a trial period from July 1 to Dec. 31, 1934. For this trial period, the royalty rate is fixed at $13.50 per net ton on ingots and $17 per net ton on billets, the melter being given the option of paying on whichever basis is preferred. Royalty on castings is fixed at 1.2 cents per pound.

The new terms impose payment of royalty solely upon those producing ingots and castings; limit the sale of ingots, billets, blooms, slabs and the like so-called semifinished

products to converters and forgers licensed under the patents; and fix the minimum prices at which the licensed products may be sold by licensees. A royalty of 5 per cent of selling price is to be paid on all other finished articles not included in these classifications.

D. M. Avey Is Nominated For President of A. F. A.

The committee to nominate officers and directors of the American Foundrymen's association met in Atlantic City, N. J., June 28, and designated the following:

For president to serve one year, Dan M. Avey, Penton Publishing Co., Cleveland; for vice president to serve one year, B. H. Johnson, R. D. Wood & Co., Philadelphia; for directors to serve three years, E. W. Campion, Buckeye Steel Castings Co., Columbus, O.; E. O. Beardsley, Beardsley & Piper, Chicago; A. E. Harrison, Allis-Chalmers Mfg. Co., Milwaukee; Frank J. Lanahan, Fort Pitt Malleable Iron Co., Pittsburgh; and Sam Tour, Lucius Pitkin Inc., New York.

The nominating committee consisted of N.K.B. Patch, Lumen Bearing Co., Buffalo; E. H. Ballard, General Electric Co., West Lynn, Mass.; T. S. Hammond, Whiting Corp., Harvey, Ill.; A. L. Boegehold, General Motors Research Laboratory, Detroit; W. C. Hamilton, American Steel Foundries, East Chicago, Ind.; E. F. Hess, Ohio Injector Co., Wadsworth, O.; and E. E. Griest, Chicago Railway Equipment Co., Chicago.

Valley Sees Canal Open New Markets

(*Concluded from Page* 19)

canal is one of the most important industrial sections of the country. It has a population of about 750,000 people—as many as the entire state of Vermont. Of this number, approximately half a million are directly dependent upon steel or steel fabricating industries, and therefore will participate in the benefits effected by the canal.

Past experience has shown that the providing of more adequate and cheaper transportation facilities to any industrial district results in expansion of that district's industrial activities and population. Thus inexpensive water transportation, instead of lessening railroad freight traffic in a community, eventually increases it.

This is graphically illustrated by the history of the Pittsburgh district. From 1900 to 1925 river tonnage in that district increased from 9,000,000 to 40,000,000 tons. During the same period, rail tonnage in the district increased from 57,000,000 to 173,000,000 tons. Thus the cheaper transportation furnished by the rivers caused the expansion of the district and benefited the railroads even more than it did the river carriers.

The extent to which a similar result may be expected to follow completion of the Beaver-Mahoning waterway is indicated by surveys as to the amount of freight which the canal may carry. Annual inbound tonnage is estimated at 7,955,700 tons; outbound tonnage at 1,225,000 tons. Annual freight savings on this basis would amount to over $6,500,000.

The amount of raw materials which can be carried on such a canal in a single tow is amazing. It is estimated that the canal will provide sufficient depth and clearnace to permit single tows of as high as 4800 tons.

Owing to the temperature averages in this district, and mill waste in the Mahoning, which prevents freezing, it appears probable that the canal would not be obstructed by ice for more than 30 days of the year, giving an operating season of 330 days.

Of still further significance to the steel industry, and to consumers of steel, is the possibility that the Beaver-Mahoning canal may prove the first step in a connecting waterway between the Ohio river and Lake Erie.

Preliminary surveys of such a canal have been made, passing from the mouth of the Beaver through Youngstown and meeting Lake Erie at Ashtabula. The latter distance is only some 60 miles.

If this larger project were eventually completed, all-water transportation for heavy materials would be made possible to the great majority of steel producers along both the Great Lakes and Ohio river systems. To consumers and producers alike, the saving effected by such a development would mount into the millions.

Equipment

Pittsburgh — Developments are proceeding slowly on the continuous wide strip mill which Carnegie Steel Co. plans for its Youngstown, O., works and it was reported last week that no appropriation and, therefore, no actual inquiry has as yet been issued. At the same time the Carnegie company is planning tentatively for some time in the future, a similar installation at its Edgar Thomson works, Braddock, Pa. However, much closer to being an actuality is the 75-inch continuous mill for the Great Lakes Steel Corp. at Detroit and inquiries covering the mill building are expected out short-

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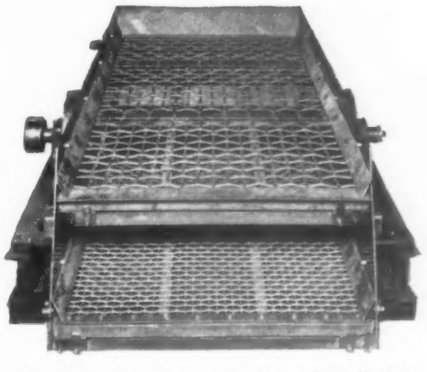

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ly. Demand for steel mill rolls and ingot molds has been improving since a week ago.

Boston—Machinery building shops are generally less active with buying and new inquiry light. Textile mill equipment builders are relatively busier than other shops. New England builders are low on considerable machinery for the navy on which contracts still pend.

Cleveland—For the past month machinery sales have dropped to a low level, but sentiment among buyers is improved and dealers look for a new high to be reached in the fall. Automotive parts manufacturers at the moment are not spending much for equipment, but with new models approaching and retooling programs already under way in Detroit, it is expected that partsmakers will be requiring more "durable goods" shortly. Proposed merger of a steel plant here with a larger interest is being scanned as a possibility leading to purchases of new mill equipment.

New York—Contrary to expectations, machinery inquiry since the first of the month is slightly heavier and several dealers note a slight gain in orders during that period. No large lists are out, but a steady demand for machinery continues for the navy department. Specifications are expected this week for technical school equipment in New York city, requiring several hundred tools.

Chicago—Machinery sales continue seasonally quiet, orders and inquiries being in the reduced volume prevailing since early June. Sellers regard the outlook as encouraging, however, and are confident of a pickup by late summer. While no immediate buying of large proportions by railroads is in prospect, the carriers are expected to be better customers later in the year than recently when purchases were dictated largely by definite necessity. Some steel plants are taking advantage of the current lull in operations to effect repairs to equipment, but major improvement programs have yet to be started. Machine tool demand generally lacks betterment, this applying to small tools as well as to larger units.

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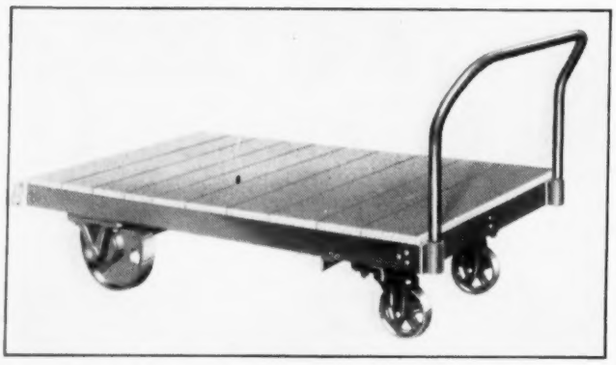

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Construction and Enterprise

New England

DERBY, CONN. — Hershey Metal Products Inc. has been incorporated with $50,000 capital, by Paul H. Hershey and associates, Orange, Conn.

DORCHESTER, MASS. — Neponset Tanning Co., 68 Devonshire street, Boston, has plans by T. B. Hamilton, 421 Marlboro street, Boston, for a 2-story plant 65 x 160 feet, to cost about $90,000.

NEWBURYPORT, MASS. — Colonial Beacon Oil Co. Inc., 30 Beacham street, Everett, Mass., plans construction of a bulk oil station on Water street, including tanks, pipe lines and accessories, to cost about $40,000.

PORTSMOUTH, N. H.—Frank Jones Brewing Co. will rebuild damage done recently by fire, costing about $75,000, including electrical power equipment.

New York

ALBANY, N. Y.—Atlantic Refining Co., 260 South Broad street, Philadelphia, will build a bulk oil storage plant on a 35-acre site here, including pumping equipment and tanks, to cost about $400,000.

BAYSIDE, L. I., N. Y.—Board of education, Park avenue and Fifty-ninth street, New York, plans construction of a large boiler plant in new high school being built on Thirty-second avenue, Bayside, at cost of $2,500,000. W. C. Martin is board architect.

OLEAN, N. Y.—City has been allotted $109,000 PWA funds for extension and improvement of municipal water system.

KINGSTON, N. Y.—Safety Pilot Valve Co. Inc. has been incorporated with $10,000 capital to manufacture safety valves and similar products, by James F. Dwyer, 70 West Chestnut street, Kingston, N. Y.

LONG ISLAND CITY, N. Y.—First National Oil Corp., 29-27 Forty-first avenue, plans construction of a bulk oil station on East River near Vernon boulevard, costing $85,000 including pumps and tanks.

Pennsylvania

ALLENTOWN, PA.—Daeufer Brewing Co., 1247 Lawrence street, has awarded contract to George H. Hardner, Lentz building, Allentown, for addition to its brewery.

GREENVILE, PA.—Greenville Steel Car Co. plant here was damaged by fire and explosion July 11. Approximately one-third of the shop was destroyed.

UNIONTOWN, PA.—Uniontown Distilling Syndicate has a program of expansion and improvement to increase capacity of its plant. Will cost about $800,000, including electrical power equipment. M. E. Minert, Uniontown, is president.

YORK, PA.—New York Wire Cloth Co. has awarded contracts for construction of wire manufacturing plant here, 112 x 180 feet.

New Jersey

CAMDEN, N. J.—City, Fred W. George, clerk, Court House, has plans for improvement to municipal light and power plant.

NEW BRUNSWICK, N. J.—East Brunswick township commission plans a waterworks system, including a steel tank on tower, to cost about $75,000. H. H. Selover, Milltown, N. J., is engineer.

RAHWAY, N. J.—Department of institutions and agencies, William J. Ellis, commissioner, State house, Trenton, N. J., will take bids July 26 for furnishing and installing two vertical motor-driven multistage deep well turbine pumps at the New Jersey reformatory, Rahway, N. J.

SEWELL, N. J.—City of Woodbury, Thomas I. Cooper, clerk, City hall, Woodbury, N. J., has been granted loan of $50,000 for municipal waterworks system at Sewell, N. J.

SKILLMAN, N. J.—Department of institutions and agencies, William J. Ellis, commissioner, State house, Trenton, N. J., will take bids July 26 for one 400-horsepower boiler, stoker and connections for power plant at state village for epileptics, Skillman, N. J.

SOUTH RIVER, N. J.—American Enameled Brick Corp. will rebuild burned portion of its plant at cost of about $350,000, including power equipment and conveyors.

Ohio

AKRON, O.—Aluminum Engineering Co. has been incorporated with 250

shares no par value, by S. C. Andress, First Central Trust building.

AKRON, O.—Kent Steel & Salvage Co. has been incorporated with 250 shares no par value, by H. L. Arenson, Peoples Bank building, Akron, O.

ALLIANCE, O.—Kulka Iron & Metal Co. has organized the Kulka Iron & Metal Co. of West Virginia and has opened an office and scrap yard at Wheeling, W. Va., with rail and water facilities. L. Paul Kulka is in charge.

CLEVELAND—Rupp Forge & Shear Co., 1735 Winter street, is planning to build a machine shop.

CLEVELAND—City council has applied for PWA loan of $8,990,000 to complete construction of sewage treatment plants.

CLEVELAND—Cleveland Range Co., 3323 Vega avenue, has been incorporated with 250 shares no par value by E. J. Demson and associates, Guardian building. Kurt Seelbach is president. The latter recently bought the name, goodwill and parts owned by a former company of the same name and has been operating the plant for production of the former line and a steam cooker of his own invention.

CLYDE, O.—Village council authorized sale of $142,000 mortgage bonds to finance water filtration and softening plant and also proposes to spend $60,000 on municipal electric light and power plant improvements.

PORT CLINTON, O.—Standard Products Co., 1011 Power avenue, Cleveland, is planning to move from Cleveland to Port Clinton and will locate in the north building of the Ohio Public Service Co. The new factory will manufacture automobile and airplane parts.

TOLEDO, O.—Revised plans for waterworks extensions, including pumping station and filters have been approved by state officers and sent to Washington for PWA approval. Cost is estimated at $8,500,000.

Michigan

BATTLE CREEK, MICH.—Machine shop of Adolph Johnson Co. recently was damaged by fire.

DETROIT—Morse Tool Co. has been incorporated with $50,000 capital to deal in tools, by William H. Morse, 3178 Bellevue avenue, Detroit.

DETROIT—Auto Tool & Die Inc., 2691 Scott avenue, has been incorporated with $2000 capital to operate a tool and die shop, by John Niechcial, 1097 Lakepoint avenue, Detroit.

DETROIT—American Alloys Co. has been incorporated to deal in alloys and metals, with $50,000 capital, by A. Shiffman, 2994 East Jefferson avenue, Detroit.

DETROIT—Detroit Creamery Co., 1930 Cass street, has started construction of a distributing building 95 x 257 feet on St. Jean avenue, to cost about $75,000 with equipment.

DETROIT—Brass Forgings Inc., 693 East Congress, has been incorporated with $10,000 capital to manufacture tools and do welding, by Wilford N. Coyer, 9373 East Jefferson avenue, Detroit.

FENTON, MICH.—Genesee Tool Co. has been incorporated with $25,000 capital to manufacture tools, by Clarence Moren, Fenton, Mich.

FLINT, MICH.—A. C. Spark Plug Co. has let contracts for a plant addition to K. Foster, Flint, Mich., at about $65,000.

GRAND RAPIDS, MICH.—City engineer is making plans for alterations and installation of additional power equipment in municipal pumping stations at cost of about $73,000. PWA loan has been approved.

GRAND RAPIDS, MICH.—Dutch Brewing Co., A. C. Guzzells, president, is having plans prepared by Don Lakie, Grand Rapids, for an addition and alterations to brewery, to cost about $45,000.

KALAMAZOO, MICH.—D. R. C. Foundry Co. recently was damaged by fire which started in flask yards at rear of foundry.

KALAMAZOO, MICH.—Leroy & Newlander, architects, are drawing preliminary plans for heating plant for Dewing & Monroe estate.

PLEASANT RIDGE, MICH.—Bids have been rejected by Voigt Brewing Co., Detroit, for brewery to be erected at Ten-mile road and Grand Trunk tracks. G. A. Mueller, architect, 1346 Broadway, Detroit, will take new bids soon.

WYANDOTTE, MICH.—Michigan Alkali Co., Wyandotte, plans erection of chemical plant to cost about $1,000,000.

Indiana

COLUMBUS, IND.—V. E. Sprouse Co., Indianapolis, manufacturer of metal products, is erecting a factory building here and will move its production plant to this city.

EVANSVILLE, IND.—Weil Packing Co., 1700 Oakley avenue, will build a 2-story cold storage plant 59 x 105 feet, to cost about $40,000. H. Peter Henschein, 59 Van Buren street, Chicago, is engineer.

INDIANAPOLIS—Indiana Breweries Inc. has plans for extensions and improvements to cost $100,000.

INDIANAPOLIS—Plant of Riverside Auto Parts Co., Indianapolis, recently was damaged by fire.

MICHIGAN CITY, IND.—City will take bids about Aug. 1 for a water filtering plant, including pumps, steel tank on tower, 100,000-gallon wash tank and electrical equipment. Greeley & Hansen, 6 North Michigan avenue, Chicago, are engineers.

NEW ALBANY, IND.—Zier Products Co. Inc., Pearl street, has been formed by Edward M. Zier, Rozine Zier and Margaret Brodfuehrer, to manufacture machinery.

TERRE HAUTE, IND.—Merchants Distillery Co., Thomas Beggs, president, has an expansion and improvement program to cost about $50,000, including electrical equipment.

Illinois

PEORIA, ILL.—Sheet Metal Products Co., 320 South Commercial street, has been incorporated by Edward H. Olsen, Bruce H. Miller and J. E. Prill, to manufacture gutters, eavestroughs, tinshop supplies and equipment. Correspondent: E. J. Galbraith, care of Galbraith & Monk, Lehmann building.

Delaware

ELSMERE, DEL.—Town commissioners, Arthur Jones, secretary, is planning to expend $75,000 for sewage system and treatment plant. Will take bids July 20.

District of Columbia

WASHINGTON — Bureau of supplies and accounts, navy department, will open bids July 20, schedule 2874, for diesel generator sets and spares, for delivery at various east and west coast points; July 27, schedule 2915, for pneumatic drills, grinders and hammers, delivery various east and west coast points.

Florida

PENSACOLA, FLA.—Navy department, bureau of yards and docks, Washington, opens bids July 25 for boiler plant and oil storage system for naval station here.

Kentucky

WARSAW, KY.—City, Herman Drees, mayor, will take bids July 23 for a waterworks system, former bids being rejected.

Louisiana

NEW ORLEANS—PWA has approved allotment of $2,570,000 for waterworks and sewer extension.

SHREVEPORT, LA.—City will receive bids July 25 for constructing incinerator of 50 tons capacity. PWA has granted loan of $180,000. Plans are by Jones, Roessle, Olschner & Wiener, Shreveport, La.

Maryland

CUMBERLAND, MD.—Survey of cost of municipal electric light and power plant has been completed by Burns & McDonnell Engineering Co., 107 West Linwood boulevard, Kansas City, Mo., at $1,523,000 and has been referred to Isaac Hirsch, chairman, public ownership league.

North Carolina

CHARLOTTE, N. C.—City, J. B. Pridgen, city manager, has loan and grant of $150,000 for sewer and $17,000 for power system.

DURHAM, N. C.—City R. W. Flack, city manager, is continuing negotiations for $200,000 PWA loan for constructing water tank, and $40,000 addition to incinerator.

HICKORY, N. C.—City has loan and grant of $151,000 for sewage treatment plant.

LINCOLNTON, N. C.—Piedmont Municipal Electric Co. has been incorporated by C. Guy Rudisill and associates interested in the erection of a steam electric light and power plant linking 12 to 15 Piedmont towns. Plans would develop 50,000 kilowatts. PWA loan will be asked.

TARBORO, N. C.—City, Rawls Howard, mayor, will receive bids July 26 for waterworks improvements, consisting of complete water purification plant, pumping station, etc.

South Carolina

COLUMBIA, S. C.—Haile Gold Mines Inc., New York, C. R. Hayes, 120 Broadway, New York, executive vice president, is planning to operate the Haile

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The scope of the work may be inferred from the 15 chapter headings which include: Facts About the Steel and Iron Base and Iron Oxides and Scale; Acids, Bath Temperature and Pickling Time; Steam, Air and Agitation; Solutions, Tanks and Contaminations; Equipment and Production Principles; Compounds and Inhibitors; Fumes, Ventilation and By-Products; Chemistry of Pickling; Design and Construction of Pickling Tanks; Design of Pickling Departments; Pickling Steel and Copper for Tinning; and, Pickling for Zinc and Lead-Coated Sheets.

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gold mine here, and will install modern machinery.

LYNCHBURG, S. C.—Town, J. D. Dougherty, mayor, will open bids July 25 for constructing complete waterworks system, including water distribution system, consisting of pipe lines, valves, meters and tank foundation, two deep wells, two deep well pumps and buildings, and 75,000-gallon elevated storage tank on 100-foot tower.

SOCIETY HILL, S. C.—E. D. Fields Jr., mayor, will open bids July 24 for waterworks system. Project consists of water distribution system, including pipe lines, valves, meters and tank foundation, deep well, deep well pump and building of 50,000-gallon elevated storage tank on 60-foot tower.

Tennessee

JACKSON, TENN.—City has loan and grant of $150,000 for improvements to waterworks and will construct 4,000,000-gallon reservoir and install meters, etc.

West Virginia

WHEELING, W. VA.—Hazel-Atlas Glass Co. is having plant prepared for an addition to its manufacturing plant to cost approximately $125,000. Frederic Faris, 1117 Chapline street, Wheeling, W. Va., is architect.

Missouri

BOLIVAR, MO.—PWA loan and grant of $90,000 for a waterworks system has been approved. E. T. Archer & Co., 608 New England building, Kansas City, Mo., are engineers.

CARTHAGE, MO.—Election will be held soon on issuing $100,000 in bonds for a water-softening plant. Black & Veatch, 700 Mutual building, Kansas City, Mo., are engineers.

ST. LOUIS—PWA has awarded additional grants of $1,954,000 for public improvements, including $720,000 for southern arsenal relief sewer, and Benton-Chamber sewer in North St. Louis.

WENTVILLE, MO.—City, John A. Nienheuser, mayor, has loan and grant of $45,000 for constructing water plant and distribution system. Will soon call for bids. Russell & Axon, 4903 Delmar boulevard, St. Louis, are engineers.

Arkansas

HOT SPRINGS, ARK.—City will receive bids about Sept. 26 for two sewage disposal plants for which PWA loan and grant of $218,000 has been made. Black & Veatch, Mutual building, Kansas City, Mo., are engineers.

Oklahoma

CLEVELAND, OKLA.—City receives bids July 31 for water supply system. Work consists of dam, 1,000,000-gallon filtration plant, pumping plant, 500,000-gallon concrete reservoir, 32,000 feet of 10-inch pipeline. George H. Griener is city engineer.

CUSHING, OKLA.—City has loan and grant of $350,000 for diesel engine plant, 2250-horsepower, and complete distribution system. Will probably call for bids in September. J. W. Flint, city manager.

PAWNEE, OKLA.—City will receive bids in August for equipment for light and power plant, including 900-horsepower diesel engine. A loan and grant of $60,000 has been approved. O. F. Sewell, Pawnee, Okla., is engineer.

PONCA CITY, OKLA.—City has been allotted $560,000 loan by PWA for waterworks system, including 8,000,000-gallon filtration plant and motor-driven pump. W. R. Holway is consulting engineer, 302 East Eighteenth street, Tulsa, Okla.

SHAWNEE, OKLA.—City has loan and grant of $750,000 for improvement to water works, including alterations to pumping station.

Texas

BEAUMONT, TEX.—Kinnear Drilling Tool Co. has been incorporated by J. W. Kinnear and L. P. Kinnear.

ECTOR, TEX.—City, B. F. Butts, city secretary, has applied to PWA for loan and grant to erect pumping plant and install pumping equipment. Charles E. Haydon, P. O. Box 644, Denison, Tex., engineer.

EDINBURG, TEX.—Hidalgo county water improvements district No. 6 has allotment of $125,000 for extending irrigation system, including additional pumping equipment.

ORANGE, TEX.—Gregory & Bernard, Crowley, Tex., engineers, are making survey of irrigation project for Orange county. Pumping plant will be constructed and four pumps, each with capacity of 50,000 gallons per minute, powered by diesel engines, will be installed.

WHITESBORO, TEX.—City authorized S. J. VonZuben, engineer, to proceed with plans for PWA financed waterworks system, consisting of well and new machinery.

Wisconsin

JANESVILLE, WIS. — Edgar J. Leach, who recently bid in assets of former Northern Conveyor & Mfg. Co., has incorporated Northern Conveyor Co. to continue business and expand line of stationary and portable conveyors.

MILWAUKEE—Walter E. Klinka, fabricator and dealer in ornamental and architectural iron and steel, 1010 West Winnebago street, has incorporated business as Walter E. Klinka & Co., with capital of $10,000.

STANLEY, WIS.—Red Press Brick Co. plans to rebuild manufacturing plant, including six kilns, wrecked recently by windstorm.

STOUGHTON, WIS.—Federal grant of $39,000 toward $125,000 power plant enlargement has been allotted city of Stoughton, and plans are being completed by W. G. Kirchhoffer, consulting engineer, 22 North Carroll street, Madison, Wis. Bids will be asked shortly on several types of standby units by E. U. Norman, city clerk.

Minnesota

MINNEAPOLIS—R. R. Howell & Co., Benjamin R. Howell, general manager, Malcolm avenue and Southeast Fourth street, manufacturers of well drilling machines, agricultural implements, couplings, saw mill machinery, etc., plan to rebuild foundry destroyed by fire recently.

SHAKOPEE, MINN. — Jacob Ries Bottling Works Inc. has awarded contract for construction of 2-story, 12 x 28-foot addition to bottling plant, including new water conditioning equipment.

South Dakota

CENTRAL CITY, S. DAK.—Black Hills Brewing Co., J. F. Davis, president, plans to start construction of a 2650-barrel capacity brewery, during July.

Iowa

BURLINGTON, IOWA — Burlington Brewing Co., 923 Osborn street, recently incorporated with $200,000 capital to take over and put into operation the old Moehn brewery, will soon award contracts for brewing machinery and equipment to cost approximately $50,000.

FORT DODGE, IOWA—Tobin Packing Co., Rochester, N. Y., T. M. Tobin, president, care H. Peter Henschein, 59 East Van Buren street, Chicago, will build a meat packing plant at Fort Dodge, including steam powerhouse and electrical equipment, to cost about $200,000.

SIOUX CITY, IOWA—Warnock Mfg. Co. has been incorporated with $25,000 capital to manufacture vending machines, by E. K. Edgar, J. S. Sears and H. J. Gleason.

SIOUX CITY, IOWA—Iowa Foundry Co., West Second and Cook streets, will soon start production of new all-steel welded furnaces, automatically controlled, designed for factories, schools, churches, etc.

Nebraska

HASTINGS, NEBR. — Modulating Valve Co. has been incorporated with capital stock of $50,000 to manufacture mechanical appliances, instruments and machines, by W. J. Scoutt, D. W. Kingsley, Henry G. Smith, Stanley H. Abbott, Albert W. Borden and Herbert F. Anderson.

Colorado

CRAIG, COLO.—Stanolind Oil Co., 520 West Second street, Salt Lake City, Utah, plans construction of a 61-mile, 4-inch pipeline from the Iles oilfield to Craig, to cost about $200,000.

Montana

BLACKFOOT, MONT.—Chicago, Milwaukee, St. Paul & Pacific railway, 80 East Jackson boulevard, Chicago, has been given approval by interstate commerce commission to construct a 14-mile extension of the Blackfoot railroad branch from Sunset near the mouth of Cotton creek to reach new timber area.

Pacific Coast

ISLETON, CALIF.—Golden State Asparagus Co. will rebuild its burned plant at cost of about $100,000, including a boilerhouse, conveyors and electrical equipment.

LOS ANGELES—Knudsen Creamery Co., 1957 Santee street, will build 1 and 2 story additions to cost about $50,000, including conveyors and electrical equipment. Roy A. Grut, 1007 South Grand avenue, is engineer.

DAYTON, WASH.—Blue Mountain Canning Co., affiliated with the Minnesota Valley Canning Co., LeSueur, Minn., is building a canning plant costing $275,000, including boilers, feed water pump, canning machinery, etc. Ralph W. Richardson, 419 New York building, St. Paul, is engineer.

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From dept. of commerce except shipments by U. S. Steel Corp., foundry equipment by Foundry Equip. Mfrs. assoc., river traffic by U. S. engineers at Pitts., electric power by geological survey.

U. S. Steel Corp.

Automobiles

Production —United States—

1932	Total*	Passenger cars	Canada
Year	1,370,678	1,134,372	60,816
1933			
Jan.	129,478	110,180	3,358
Feb.	105,933	90,425	3,298
March	115,985	97,782	6,632
April	177,059	150,515	8,255
May	214,832	181,927	9,396
June	250,290	209,083	7,323
July	230,140	192,894	6,540
Aug.	233,825	193,111	6,079
Sept.	192,613	158,678	5,808
Oct.	134,956	105,685	3,682
Nov.	61,031	41,066	2,291
Dec.	81,114	50,621	3,262
Year	1,927,256	1,581,967	65,924
1934			
Jan.	156,907	113,331	6,904
Feb.	231,707	187,639	8,571
Mar.	331,263	274,722	14,180
Apr.	354,745	289,030	18,363
May	331,641	273,765	20,161
5 Mo.	1,406,263	1,138,487	68,179
June	.....	.....	.....

*Difference of total and passenger cars equals number of trucks. †Average monthly shipments, 1922-23-24 taken as 100
‡Figures by American Institute of Steel Construction, from January, 1933, 75 to 85 per cent of industry reporting.

Shipments

To consumers only, inter-company shipments not included

1932	Tons
Year	3,974,062
1933	
Jan.	285,138
Feb.	275,929
March	256,793
April	335,321
May	455,302
June	603,937
July	701,322
Aug.	668,155
Sept.	575,161
Oct.	572,897
Nov.	430,358
Dec.	600,639
Year	5,805,235
1934	
Jan.	331,777
Feb.	385,500
Mar.	588,209
Apr.	643,009
May	745,063
5 Mo.	2,693,558
June	985,337

Fabricated Shapes‡

Net Tons

1932	Bookings Tonnage	Shipments Tonnage
Year	948,000	942,400
1933		
Jan.	73,679	50,965
Feb.	50,955	46,168
March	71,398	54,948
April	46,095	50,387
May	42,600	63,968
June	81,910	64,809
July	56,482	51,303
Aug.	78,379	67,913
Sept.	57,642	64,362
Oct.	53,695	73,139
Nov.	60,896	56,023
Dec.	83,799	56,388
Year	757,530	700,373
1934		
Jan.	74,358	46,774
Feb.	60,036	38,101
Mar.	82,250	50,685
Apr.	96,836	66,380
May	61,605	80,580
5 Mo.	375,085	282,521
June	.....	.....

Fabricated Plates

Net Tons Bookings

1932	Total	Oil Storage Tanks	Miscellaneous
Year	161,810	38,976	109,085
1933			
Jan.	11,128	1,501	8,830
Feb.	16,588	8,347	7,660
March	8,903	1,270	6,787
April	9,502	2,938	6,291
May	16,243	2,858	8,183
June	37,020	20,894	14,013
July	20,058	6,013	11,417
Aug.	16,320	2,581	10,618
Sept.	16,025	1,033	13,602
Oct.	17,839	1,434	12,162
Nov.	14,466	3,734	9,466
Dec.	13,692	2,160	9,819
Year	199,031	55,025	119,569
1934			
Jan.	15,897	3,754	10,512
Feb.	14,641	2,476	10,452
Mar.	38,924	2,202	33,806
Apr.	20,085	2,998	13,447
May	21,699	8,746	10,610
5 Mo.	111,246	20,175	78,827
June	.....	.....	.....

Foundry Equipment Order Index†

1932	
Year	
1933	
Jan.	68.4
Feb.	16.1
March	9.8
April	19.4
May	25.7
June	45.5
July	48.6
Aug.	56.2
Sept.	34.9
Oct.	42.46
Nov.	36.62
Dec.	43.2
Year	.....
1934	
Jan.	37.2
Feb.	65.8
Mar.	75.4
Apr.	67.8
May	66.5
5 Mo.	....
June	....

Malleable Castings

Net Tons

1932	Output	Shipments	Orders booked
Year	171,479	178,316	169,027
1933			
Jan.	12,577	14,248	12,404
Feb.	13,575	14,068	11,077
March	9,756	10,967	12,380
April	17,871	16,666	17,856
May	24,628	23,077	24,671
June	31,118	29,268	31,997
July	30,865	29,155	28,458
August	31,811	30,195	28,323
Sept.	27,078	25,402	22,744
Oct.	24,381	20,422	19,933
Nov.	21,903	19,722	20,776
Dec.	21,870	22,300	26,305
Year	268,617	256,419	258,082
1934			
Jan.	30,417	26,642	32,501
Feb.	33,939	31,412	36,594
March	43,438	41,530	42,961
April	40,742	39,817	38,453
May	37,165	39,443	32,639
5 Mo.	185,701	178,894	183,148

Steel Castings

Net Tons

1932	Total bookings	Total production
Year	155,837	175,831
1933		
Jan.	14,450	15,378
Feb.	13,179	13,802
March	13,178	14,896
April	15,942	13,492
May	22,612	20,751
June	34,965	29,455
July	31,878	31,718
August	31,502	33,834
Sept.	25,220	28,087
Oct.	26,135	27,826
Nov.	25,558	24,721
Dec.	25,612	23,718
Year	280,231	277,678
1934		
Jan.	26,296	27,644
Feb.	35,698	28,526
March	60,044	39,475
April	63,142	46,242
May	46,831	57,313
5 Mo.	232,013	199,216

Mech. Stokers

—Sales—

1932	Fire tube boilers	Water tube boilers
Year	920	367
1933		
Jan.	55	13
Feb.	38	23
March	69	17
April	28	34
May	54	44
June	147	50
July	110	67
August	157	61
Sept.	175	28
Oct.	147	31
Nov.	142	40
Dec.	109	13
Year	1,231	421
1934		
Jan.	100	23
Feb.	49	25
March	62	43
April	48	39
May	110	35
5 Mo.	369	165

Steel Furniture

Dollars 000 omitted

1932	Business shipments	Shelving, shipments
Year	8,102	2,166
1933		
Jan.	582	121
Feb.	464	104
March	482	137
April	404	133
May	511	166
June	636	165
July	522	156
August	693	178
Sept.	734	163
Oct.	825	146
Nov.	799	195
Dec.	1,040	202
Year	7,697	1,870
1934		
Jan.	996	214
Feb.	894	279
March	955	394
April	934	346
May	1,010	288
5 Mo.	4,791	1,524

Babbitt Metal

Pounds 000 omitted

1932	(a) Total production	(b) Sales
Year	16,990	12,412
1933		
Jan.	1,346	1,073
Feb.	1,117	917
March	1,134	941
April	1,544	1,270
May	2,110	1,785
June	2,327	1,877
July	2,484	1,941
August	2,753	2,059
Sept.	2,419	1,803
Oct.	2,090	1,554
Nov.	1,963	1,606
Dec.	1,459	1,043
Year	22,812	17,876
1934		
Jan.	2,256	1,838
Feb.	2,147	1,715
March	2,474	1,976
April	2,527	1,964
May	2,425	1,889
5 Mo.	11,830	9,384

(a) by 40 plants. (b) by 30 manufacturers who produce for sale, including 5 who also report consumption of own metal.

Coke

Net Tons Production

1932	By-Product	Beehive
Year	21,166,913	772,500
1933		
Jan.	1,784,527	81,900
Feb.	1,638,817	84,100
March	1,666,035	93,300
April	1,656,183	47,000
May	1,921,257	47,300
June	2,241,432	50,100
July	2,797,316	68,400
August	2,923,418	70,600
Sept.	2,712,050	59,500
Oct.	2,581,834	45,000
Nov.	2,334,597	92,800
Dec.	2,454,947	89,500
Year	26,722,400	829,500
1934		
Jan.	2,475,785	96,600
Feb.	2,493,494	118,300
March	2,968,573	149,700
April	2,875,451	60,800
May	3,191,869	51,300
5 Mo.	14,005,172	476,700

*For public use.

Electric Power

Millions Kilowatt Hours

1932	Production*
Year	83,153
1933	
Jan.	6,932
Feb.	6,285
March	6,674
April	6,462
May	6,996
June	6,231
July	7,479
August	7,686
Sept.	7,347
Oct.	7,478
Nov.	7,243
Dec.	7,447
Year	85,260
1934	
Jan.	7,631
Feb.	7,049
March	7,717
April	7,444
May	7,673
5 Mo.	37,514

Steel Barrels

Units

1932	Production	Shipments
Year	4,920,482	4,928,420
1933		
Jan.	341,382	341,055
Feb.	311,111	312,919
March	427,562	425,682
April	452,086	454,794
May	531,304	531,921
June	643,982	640,596
July	623,056	621,042
August	537,801	527,811
Sept.	580,471	585,842
Oct.	873,536	863,277
Nov.	638,850	644,954
Dec.	610,440	610,365
Year	6,571,581	6,560,258
1934		
Jan.	708,086	706,209
Feb.	573,391	572,915
March	695,681	703,101
April	657,185	658,216
May	494,051	489,186
5 Mo.	3,128,472	3,129,765

River Traffic

Net Tons

1932	Allegheny	Monongahela	Ohio
Year	67,117	284,954	418,990
1933			
Jan.	1,627	11,724	18,002
Feb.	1,656	17,904	23,614
March	425	19,546	32,917
April	3,025	35,795	37,191
May	4,400	39,890	46,038
June	815	58,179	56,484
July	3,900	68,453	62,096
August	3,234	67,389	69,531
Sept.	2,000	43,026	38,480
Oct.	4,240	39,026	49,047
Nov.	1,550	28,216	39,573
Dec.	4,130	38,693	31,038
Year	31,007	467,841	509,011
1934			
Jan.	590	27,158	54,109
Feb.	520	12,429	4,373
March	2,180	40,685	47,897
April	5,100	51,995	72,974
May	3,050	72,922	73,361
5 Mo.	11,440	205,189	252,714

Steel Boilers

Units

1932	Total	Stationary	Marine
Year	3,652	3,580	72
1933			
Jan.	197	189	8
Feb.	176	162	14
March	195	186	9
April	236	228	8
May	328	307	21
June	511	496	15
July	498	491	7
August	511	441	70
Sept.	447	442	5
Oct.	395	377	18
Nov.	296	291	5
Dec.	328	310	18
Year	4,118	3,920	198
1934			
Jan.	249	239	10
Feb.	212	198	14
March	294	283	11
April	380	361	19
May	304	294	10
5 Mo.	1,439	1,375	64

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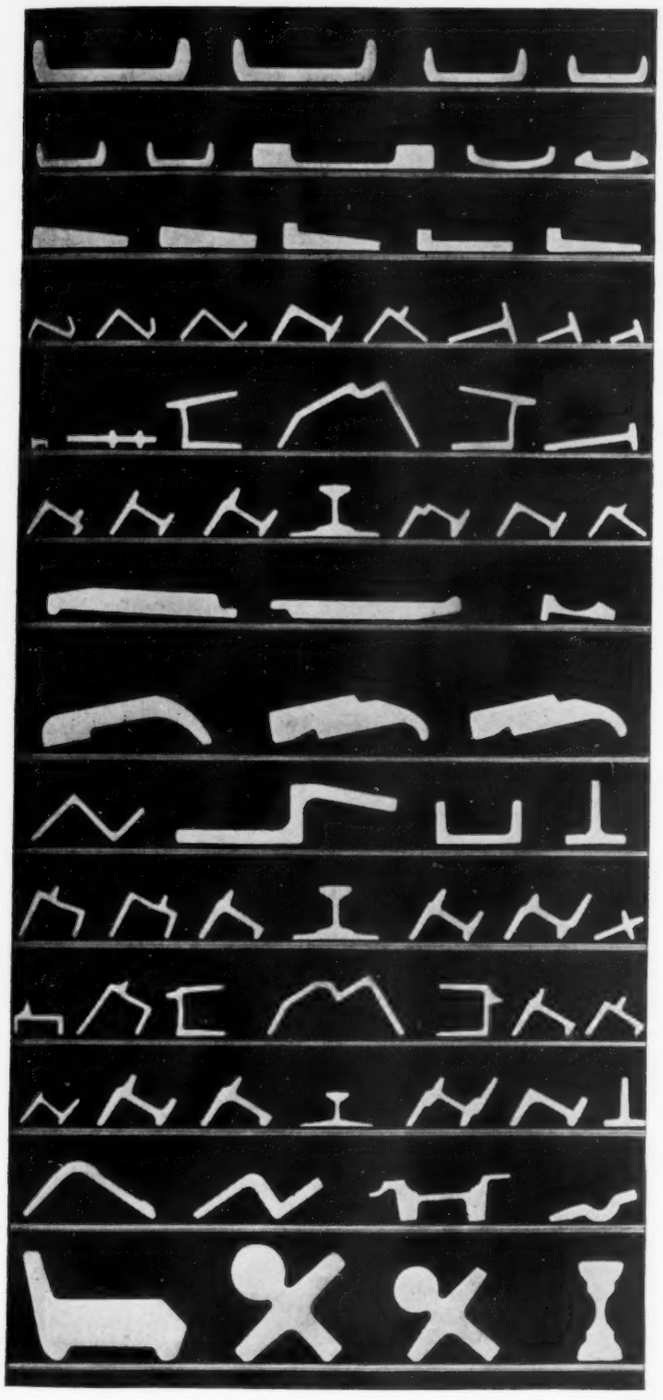

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Balancing Urban and Rural Purchasing Power

To the Editor:

I wonder why you do not take a somewhat broader view of the basic requirement for successful trade. Nations, groups and individuals are continually seeking a temporary advantage, appearing to forget that any advantage gained destroys the customers' future purchasing power.

I have compiled a few figures to illustrate by means of the rural and urban groups the ultimate failure of any attempt by government to effect a remedy financed by discriminatory taxation. It makes no difference whether by taxation, costs of social benefits or permissive exercise of the taxing power by business codes, the result will be the same: Destruction of purchasing power and a lower standard of living.

Taking 55,000 millions as the sales price of all goods sold and deducting 15,500 millions taxes we have left 39,500 millions.

Assuming the total market for rural products to be 10,000 millions it would leave 45,000 millions as the sales value of the goods of the urban group.

It will be near enough to use 28 per cent of the total national sales as the average national tax rate. Five per cent can be used for the goods of the rural group and 30 per cent for the urban. At these rates the tax on the rural goods would yield 500 millions and the urban 15,000 millions.

The total purchasing power of the rural group is 9500 millions and their goods can be exchanged for 9500 millions *sales value* of urban goods made up of 6650 millions in goods and 2850 millions of urban taxes.

Urban goods having a sales value of 13,572 millions must be sold to net the 9500 millions necessary to purchase the rural goods and a market must be found *outside* the rural group for 4072 millions of urban goods.

By using the 28 per cent average tax rate throughout we can raise the living standards of the rural group 2850 millions, find a market for 13,194 millions of urban goods *within* the rural group and at the same time increase the tax yield from 4572 to 7388 millions.

An average tax rate of 28 per cent would raise the sales price of rural products to 13,194 millions and 13,194 millions of urban sales would purchase the entire production of rural goods marketed. Each group would receive 9500 millions of actual value in goods and the 3694 millions of taxes paid each to the other would cancel.

SAMUEL CANEDO BOND

Holly Oak, Del.

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Favors Vigorous Sales Promotion for Steel

To the Editor:

May I take this opportunity of congratulating you on your editorial "Steel—Giant in Production, Pigmy in Merchandising," appearing in the May 14 issue of STEEL.

As you probably know, we are pioneering the field urging the use of Stran-Steel for residential construction. Thousands of inquiries addressed to our company during the last 12 months, hundreds of estimates and quite a few orders attest to the great interest on the part of architects, builders and home owners. We often wish that this activity might in some way be reflected to the large steel purchasing companies. We stand amazed at their apparent lack of interest in this new development.

It is possible, of course, that they are standing on the sidelines and will at some time that seems propitious from their standpoint step into the picture and give the movement impetus.

With the very obvious shrinkage in volume from other lines and with a probable building activity of considerable proportions breaking in the next year or two, it would seem that the American Iron and Steel institute or the American Institute of Steel Construction, or individual producers, should step into the breach and capitalize on the interest displayed by the public and the architects, and get general publicity for steel in this field.

Our contact with the house building field has extended over something like 25 years and we feel that this is the psychological moment for the steel interests to support an advertising and publicity program. It will not sell itself and companies like ours earnestly endeavoring in their small way to make an impression and establish themselves cannot, after all make *much* of an impression. Our business would increase enormously if more pressure were put on the use of steel for residential work. Not only that, but other companies who have been developing methods of using steel in house construction will be encouraged to spend money and soon steel will have a firm grip on the residential building business.

C. A. STRAND, President
Stran-Steel Corp.

Detroit.

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Urges Regulation for Competitors of Railroads

To the Editor:

It is a well recognized economic principle that stability in transportation costs and publicity as to all charges are absolute necessities to the sound and intelligent conduct of business. If a merchant has his goods delivered by a transportation agency which has its rates fixed by law and which is required to publish those rates and cannot change them without notice to the public, he knows his own transportation cost and those of his competitor and is able to establish prices accordingly.

The unregulated motor trucker is under no rules or regulations required of the railroads. He may follow his own will in such matters as making rates and changing them, upon a moment's notice. They vary with the volume of traffic, the direction of traffic, the ownership of the truck, and with the prospect of future business. Thus a merchant on one side of the street may gain a tremendous advantage or suffer undue prejudice by reason of the rates accorded to his competitor on the opposite side of the street.

Today, the railroads are required to publish their rates and charges, and they are forbidden to change any rate until after notice of the proposed change has been given. They are required to carry without prejudice all traffic offered and are forbidden to discriminate in any manner between individuals or places. No such federal restrictions apply to carriers by water or by truck on the highways. If in the public interest restrictions of the kind mentioned, among others, are necessary for the railroads, they would seem to be no less necessary for other transportation agencies.

T. M. ANDERSON, Sales Manager,
River Side Mills

Augusta, Ga.